



STRAITS SETTLEMENTS.

The Straits Settlements Medical Report for the year 1917.

POPULATION AND HEALTH.

The following table gives the estimated population and the birth and death-rates for the years 1916 and 1917:—

SETTLEMENT.	Estimated mean Population.		Birth Nos.		Death Nos.		Birth Ratio per mille.		Death Ratio per mille.	
	1916.	1917.	1916.	1917.	1916.	1917.	1916.	1917.	1916.	1917.
Singapore ...	349,428	359,459	8,998	9,474	10,467	12,837	25.75	26.36	29.95	35.71
Labuan ...	6,862	6,796	296	210	202	264	43.13	30.90	29.44	38.84
Penang ...	148,737	149,792	4,032	4,416	4,477	5,351	27.11	29.48	30.10	35.72
Province Wellesley	136,820	137,978	4,108	4,484	3,480	3,914	30.02	32.50	25.43	28.35
Dindings ...	10,448	10,646	268	380	457	473	25.65	35.69	43.74	44.43
Malacca ...	141,444	145,198	4,640	5,862	5,288	7,111	32.80	40.37	37.38	48.97
Total ...	793,739	809,869	22,342	24,826	24,371	29,950	28.15	30.65	30.70	36.98

The figures for the European population are:—

SETTLEMENT.	Estimated mean Population.		Birth Nos.		Death Nos.		Birth Ratio per mille.		Death Ratio per mille.	
	1916.	1917.	1916.	1917.	1916.	1917.	1916.	1917.	1916.	1917.
Straits Settlements.	8,293	8,490	163	173	137	81	19.65	20.38	16.76	9.54

The population of the last Census (1911) was 711,951 and is estimated at 809,869 for 1917. This is worked out by geometrical progression as for normal times on the basis of the census figures for 1901 and 1911.

The figure quoted in the second table will be somewhat unreliable and incorrect owing to the departure of Europeans for war service.

2. The total immigrants from China in 1914 were 147,150.

The total immigrants from China in 1915 were 95,735

The total immigrants from China in 1916 were 183,399

The total immigrants from China in 1917 were 155,167.

Births.

3. The births registered during the year numbered 24,826 as compared with 22,342 in 1916. The ratio per mille is 30.65 against 28.15 in 1916 and 29.25 in 1915. The ratio for the year under review, 30.65, is the highest since the Registration Law (1897) came into force.

Deaths.

4. The deaths from all causes registered in 1917 were 29,950 as against 24,371 in 1916. This corresponds to a ratio per mille of 36·98, an increase compared with 1916 figure, viz., 30·70. The ratio for 1915, 29·15, was the lowest since 1899. The average for the last 10 years, 1908-1917 was 37·29.

Infantile Mortality.

5. The infantile mortality gives a ratio of 266·92 per mille compared with 216·72 per mille in 1916 and 236·88 per mille in 1915 after excluding all children born elsewhere than in the Colony.

The largest infantile mortality for the fifth year in succession was among the Malays, 319·42, the Chinese coming next with 232·29.

European Officers.

6. Table shewing the sick, invaliding and the deaths of European Officials of all ranks:—

			1916.	1917.
(1)	Total number of officials resident	...	439	435
(2)	Average number resident	...	330	338
(3)	Total number on sick list	...	147	164
(4)	Total number of days on sick list	...	1,899	2,177
(5)	Total number invalided	...	7	4
(6)	Total deaths	...	2	4
(7)	Total deaths in the Colony	...	1	3
(8)	Average daily number on the sick list for each patient	...	40	45
(9)	Average number of days on sick list for each patient	...	12·92	13·27
(10)	Percentage of deaths to average number resident	...	·6	1·18

Zymotic Diseases.

7. The following table gives the number of cases of zymotic diseases occurring in the Colony during 1916 and 1917, excluding imported cases:—

SETTLEMENT.	PLAGUE.				CHOLERA.				SMALL-POX.			
	1916.		1917.		1916.		1917.		1916.		1917.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Singapore	23	20	45	39	15	8	8	6	78	25	41	8
Penang	1	1	6	5	1	1	1	1	125	53	191	56
Province Wellesley	...	...	...	...	10	8	2	2	124	43	331	112
Malacca	...	...	...	...	...	...	...	...	2	1	6	...
Labuan	...	...	...	...	...	...	...	...	...	...	...	...
Dindings	2	2	...	...	...	...	...	...	...	...	...	...
Total	26	23	51	44	26	17	11	9	329	122	569	176

The total number of deaths from Diphtheria was 20, compared with 11 in 1916. Of the 12 cases treated in hospitals one ended fatally.

Enteric Fever was responsible for 77 deaths, the number for 1916 being 55. The number of the cases treated in the hospitals was 116 with 42 deaths.

Beri-beri accounted for 2,075 cases. For 1916 the number of deaths was 1,075 and for 1915, 1,079. One thousand five hundred and twenty cases were treated in the hospitals with 299 deaths.

Venereal Diseases.

8. The total cases treated in all hospitals in 1917 were 3,232 with 82 deaths. For 1916 the figures were 3,360 and 83 respectively.

Phthisis.

9. The deaths registered from this cause were 3,084, against 2,741 in 1916 and 2,580 in 1915.

Dysentery.

10. Dysentery was responsible for 1,064 deaths as against 789 in 1916 and 769 in 1915. Of the cases treated in hospitals, which totalled 1,516, five hundred and sixty-three cases ended fatally against 1,230 with 405 in 1916.

Malaria.

11. Malaria accounted for 3,766 deaths, compared with 3,352 in 1916 and 2,929 in 1915. The corresponding figures for Fever not classified were 4,030, 3,512 and 3,168 respectively. Malarial admissions to the hospitals of the Colony were 7,357 with 613 deaths, compared with 7,584 cases and 564 deaths in 1916.

Ankylostomiasis.

12. The total number treated in the hospitals of the Colony for the last five years are :—

<i>Year.</i>			<i>Remained from pre- vious year.</i>	<i>Admitted during the year.</i>	<i>Total treated.</i>	<i>Deaths.</i>
—			—	—	—	—
1913	...	...	91	982	1,073	159
1914	...	...	33	1,098	1,131	174
1915	...	...	70	932	1,002	141
1916	...	...	49	1,206	1,255	214
1917	...	...	83	1,443	1,526	268

The Commission from the Rockefeller Institute has finished its work but the Report has not arrived yet.

12. Hospitals and work done in all Settlements :—

Year.	Number Treated.			Number of Deaths.			Percentage of Deaths to Total Treated.		
	Europeans.	Natives.	Total.	Europeans.	Natives.	Total.	Europeans.	Natives.	Total.
1912	1,794	40,420	42,214	87	4,566	4,653	4.85	11.29	11.02
1913	2,255	37,470	39,725	82	3,853	3,935	3.66	10.29	9.09
1914	2,555	37,926	40,481	111	3,642	3,753	4.34	9.6	9.27
1915	2,305	30,916	33,221	92	2,889	2,981	3.99	9.34	8.97
1916	1,843	32,623	35,466	82	3,289	3,371	4.45	9.78	9.50
1917	1,904	34,559	36,463	83	4,006	4,089	4.36	11.59	11.21

Singapore Hospitals.

13. The number of European cases treated in the General Hospital during the year under review was 1,184 against 1,166 in 1916. The natives number 4,057. The total deaths were 439 (49 Europeans and 390 natives).

Nine thousand five hundred and fifty-two patients were treated at the Tan Tock Seng's Hospital, Singapore, with 1,298 deaths, the numbers for Europeans being 115 and 9 respectively. The average daily sick was 561·67 compared with 488·92 in 1916.

The number of patients remaining in the Lunatic Asylum on 1st January, 1917, was 333 and the admissions during the year 268 making the total treated of 601 patients (45 Europeans and 556 natives). The total deaths were 2 Europeans and 71 natives and the average daily sick being 361.

Penang Hospitals.

14. The total treated in all Penang Hospitals, excluding Province Wellesley, is 9,760 of whom 386 were Europeans and 9,374 natives. Of these 977 died (19 Europeans and 958 natives). In 1916, the total number treated was 10,339 and the total deaths 903.

Province Wellesley Hospitals.

15. On the 1st January, 1917, there remained in the Hospitals in Province Wellesley 90 patients, and during the year 2,674 cases were admitted, making a total treated of 2,764—all these cases being natives. The deaths were 305.

Malacca Hospitals.

16. Six thousand two hundred and sixteen patients were treated in all the hospitals at Malacca during the year under review with a mortality of 803 cases. In 1916 the figures were 6,035 and 612 respectively.

All Hospitals.

17. The total treated and deaths in the hospitals of the Colony for some of the more important diseases are shewn in the subjoined statement with the corresponding figures for the three preceding years:—

Diseases.	1914.		1915.		1916.		1917.	
	Total treated.	Deaths.	Total treated.	Deaths.	Total treated.	Deaths.	Total treated.	Deaths.
Malaria Fever ...	8,129	528	5,590	311	7,584	564	7,355	613
Dysentery ...	1,470	530	1,267	407	1,230	405	1,516	563
Diarrhœa ...	720	127	526	50	447	61	431	28
Beri-beri ...	1,764	183	940	92	755	104	1,520	299
Phthisis and Tuberculosis	1,226	575	1,162	551	1,127	519	1,214	594
Enteric ...	142	67	100	44	108	31	116	42
Ulcers ...	3,266	2	2,743	2	2,617	1	2,323	1
Venereal Diseases ...	3,472	34	4,124	56	3,360	83	3,232	82
Ankylostomiasis ...	1,131	174	1,002	141	1,255	214	1,526	268

Public Health.

18. In Singapore there was no serious outbreak of Zymotic Diseases, there occurred 45 cases of Plague, 41 cases of Small-pox and 8 cases of Cholera.

Out-Door Dispensaries.

19. Thirty-one thousand one hundred and seventy-four patients sought medical assistance as out-patients in the different out-door dispensaries of the Colony compared with 29,616 in 1916 and 37,246 in 1915.

Medical School.

20. For the full course (L. M. S.) thirty-one students joined the School during the year, making a total of 86 on the Roll. Eighteen students received the L. M. S. diploma. Since the School was opened in May, 1910, eighty-five students have taken the diploma.

The number of students for the two-year course (Hospital Assistants) is 22. Since 1908 certificates have been granted to 130 Hospital Assistants.

Dr. KEITH, the Principal, who left for England on sick leave on the 24th November, 1916, did not improve in health and was obliged to retire in December. The resignation of this brilliant officer is a great loss to the School.

Pathological Department.

21. Dr. FINLAYSON was recalled from war work and resumed duty as Pathologist in January.

Miscellaneous.

22. Twenty-seven medical practitioners were registered during the year. The total on the Register is now 481.

Sixty-two licences were issued to chemists and druggists and to medical practitioners and thirty-three licences to dentists under the Deleterious Drugs Ordinance. Sixty-nine licences were issued under the Poisons Ordinance.

The following were the members of the Hospital Board during the year excluding Government Ex-officio members:—

The Hon'ble Mr. C. I. CARVER.

Dr. J. A. R. GLENNIE.

Dr. E. A. ELDER.

Mr. F. J. HALLIFAX.

Mr. GOH TEIK CHEE.

Messrs. WEARNE BROTHERS presented the Hospital Board with a motor ambulance for public use. This ambulance is housed at the Central Fire Station in Hill Street. From May the day it was received to December the ambulance was used 57 times.

The Medical Department suffered a severe loss through the death on October 8th of the Principal Civil Medical Officer, the Hon'ble Dr. WILLIAM GILMORE ELLIS. Dr. ELLIS was due for retirement about 16 months earlier but remained at his post on account of the shortage of officers due to the war.

S. LUCY,

Principal Civil Medical Officer, S. S.

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APPENDIX A.

SINGAPORE.

GENERAL HOSPITAL.

REPORT BY DR. J. HARRISON, M.D., C.M., *Acting Chief Medical Officer-in-charge.*

1. *Hospital Buildings.*—In December a beginning was made with the building of the quarters for night nurses—a want which has long been felt and which will, it is hoped, be completed early.

In the meantime temporary accommodation has been found for the nurses on night duty at the Principal of the Medical School's Bungalow which was unoccupied during the latter part of the year.

The whole Hospital, with the exception of the Maternity Ward and including the Dressers' and Servants' quarters has been whitewashed and repainted.

2. *Work done.*—Comparative table shewing the total number of patients treated in all wards during the past five years (exclusive of Maternity patients).

Year.	European Wards.	Died.	Percent-age.	Native Wards.	Died.	Percent-age.
1913	791	38	4·80	3,509	278	7·92
1914	941	56	5·84	3,482	326	9·25
1915	1,089	51	4·68	3,238	246	7·59
1916	1,038	65	6·26	3,350	299	8·09
1917	1,120	49	4·37	3,800	382	10·05

3. Of the above 49 deaths in the European Wards 15 took place within 48 hours of admission, and of the deaths in the Native Wards 174 took place within 48 hours of admission. Deducting these, the death-rate for the European Wards was 3·03 per cent and for the Native Wards 5·47 per cent. Similar figures for the previous year show a death-rate of 4·86 and 3·85 respectively.

4. The chief diseases treated in all wards are shewn below together with a comparative statement for the previous four years.

Disease.	1917.	1916.	1915.	1914.	1913.
Malaria	790	774	510	935	780
Enteric Fever	69	58	54	69	75
Phthisis	110	133	114	103	...
Dysentery	81	73	74	114	73
Venereal Disease	301	318	355	213	286
Beri-Beri	76	28	29	70	51
Pneumonia	83	*54	*50	*55	*49
Ankylostomiasis	194	...	...	...	...
Injuries	853	1,010	1,038	1,022	991

* Native Wards only.

Other disease were:—Blackwater Fever 4, Diphtheria 11, Bronchitis 60, Dengue 12, Measles 7, Mumps 7, Diseases of the Eye 61, and Cerebro-Spinal Fever 5.

5. The chief causes of death were:—Malaria 62, Phthisis 50, Pneumonia 44, Injuries 38, Beri-Beri 32, Dysentery 24, Diseases of the Heart 23, Enteric Fever 17, Ankylostomiasis 14, and Nephritis 11.

6. Two hundred and forty cases were sent in by the Police for free treatment as compared with 549 in 1916.

Native Police.

7. There were 317 admissions to Hospital as compared with 325 in 1916. They included 133 Sikhs, 104 Malays, 15 Chinese and 65 Indians (other than Sikhs).

The chief diseases under treatment were:—Malaria 23, Bronchitis 15, Venereal Diseases 39, and Ankylostomiasis 15.

No deaths occurred among these patients.

Surgical Work.

8. The Surgery has been in charge of Drs. ADAMS and BURNE jointly (acting) from the beginning of the year until May 31st, when Dr. C. J. SMITH took charge on his return from Europe.

The European Operating Theatre as in the former two years was used for all cases from the European Wards and for major operations from the Native Wards.

There were 855 operations performed for all wards of which 286 were major operations.

Spinal Anaesthesia was used in 25 cases of the 286 major operations. The chief were:—Hernia 30, Appendicectomy 41, Hysterectomy 2, Wiring and plating of fractures 3, Operations for Aneurism 2, Trephining Skull 8, Carcinoma of Breast 3, Operations for Mastoiditis 4, Removal of Laryngeal Sept 1, Gastro-enterostomy 3, Hepatic Abscess (amoebic) 3, Excision of Spleen 2, Cholecystotomy 5, Ruptured Ectopic 3, and Caesarian Sections 1.

Maternity Wards.

9. There were 321 admissions for the year as compared with 300 for the previous year.

The nationalities of those admitted were as follows:—

Of European Descent	...	...	...	58
Eurasians	...	...	...	11
Chinese	...	...	...	192
Tamils	...	...	...	19
Japanese	...	...	...	13
Sikhs	...	...	...	24
Malays	...	...	...	4
Total				321

The average weight of the European and Eurasian male infants was 7 lbs. 6 ozs., and female 7 lbs. 8 ozs. The average weight of the native babies was males 6 lbs. 11 ozs., and females 5 lbs. 10 ozs.

There were 35 premature and still-births.

The more serious cases included Adherent Placenta 3, Twins 2, Shoulder Presentation 1, and Eclampsia 2. Forceps were applied in 15 cases.

There were 8 deaths due to:—Beri-beri 1, Ante partum Hæmorrhage 2, Shock and prolonged labour 2, Nephritis 1, Tuberculosis of Intestine 1, and Tubercular Pleurisy 1.

During the year under review 12 pupil midwives were entered for a course of six months training. Of these 8 succeeded in obtaining diplomas.

FREE MATERNITY HOSPITAL, VICTORIA STREET.

10. During the year under report 206 women have been delivered of whom:—

146	have been Chinese
32	„ „ Tamils
10	„ „ Jewesses
12	„ „ Eurasians
4	„ „ Europeans
3	„ „ Japanese
3	„ „ Malays

Last year (1916) the total number was 195.

There have been no adult deaths.

One hopeless case of Eclampsia was taken home where she died soon afterwards.

A case of Puerperal Mania was removed to Kandang Kerbau. She recovered.

There is one infant death recorded (premature-birth).

There were 10 still-births.

The complicated cases were 20 in number:—2 Lateral Placenta Praevia, 1 Mammary abscess, 1 Phthisis, 1 Impacted shoulders and collapse (12 lbs. baby), 1 baby with syphilitic Pemphigus, 1 Breech—aftercoming head delivered with forceps, 1 Brow (forceps), 2 Twins, 2 Eclampsia, 1 Hydramnios 1 Puerperal-Mania, 1 Accidental hæmorrhage, 1 Breech, 1 Adherent Placenta, 1 Miscarriage, 1 Inevitable Abortion, 2 Forceps.

The average weights of infants were:—

Europeans	...	...	...	8 lbs.
Jewesses	...	..	...	7 „
Eurasians	...	..	...	7 „
Tamil	...	...	...	6 „ 4 ozs.
Chinese	...	...	...	6 „ 12 „
Japanese	...	...	...	7 „ 8 „
Malays	...	...	...	6 „

PRISON HOSPITAL.

REPORT BY DR. T. MURRAY ROBERTSON, M.D., *Acting Prison Surgeon.*

1. The health of the Prison has not been satisfactory.

2. The number of admissions to Hospital was 814 and the average daily sick 38, against 788 and 31 in the previous year.

3. A large number of prisoners suffered from Nephritis and Dropsy of undetermined origin (most probably due to cold and wet weather).

4. The death-rate was very high. There were 44 deaths against 14 in 1916. This is accounted for by the poor state of health of many prisoners on admission.

5. *Europeans and Eurasians.*—Only five were admitted to Hospital. One died from Chronic Bright's Disease.

6. The following table shews admissions, deaths, etc., of different classes of prisoners:—

	Criminal.	Civil.	House of Detention.
Total population	3,016'00	3,241'00	394'00
Average daily number	644'00	97'00	33'00
Number admitted to Hospital ...	719'00	24'00	71'00
Number died in Hospital	32'00	2'00	10'00
Average daily sick	35'00	0'07	2'07
Percentage deaths to total population ...	1'06	0'06	2'05

7. *Cholera*.—There was none.

8. *Beri-Beri*.—There were 5 cases with 4 deaths.

Three were recurrences, having had the disease outside the Prison.

9. *Dysentery*.—Seventy-four cases were admitted to Hospital with 17 deaths, against 45 and 4 in 1916 and 105 and 11 in 1915.

10. *Diarrhœa and Colitis*.—There were 109 cases with 1 death.

11. *Tuberculosis* accounted for 10 admissions with 4 deaths.

12. *Deaths*.—There were 44 in Hospital giving a percentage of 5'2 to total treated and 0'6 to total population.

13. *Causes of death*.—Dysentery 17, Nephritis 9, Heart Disease 6, Beri-Beri 4, Tuberculosis 4, Pneumonia 2, Empyema 1, Diarrhœa 1.

14. *Grades of those who died*.—Sixteen occurred amongst Long-sentence prisoners. Short sentence 13, Vagrants 10, Revenue 3, and Civil 2.

15. Besides these, two Chinese remand prisoners were found dead in their cells from Heart failure, one from Chronic Malaria and the other Heart Disease.

16. Suicide by hanging 4, two in the Criminal and two in the Civil Prison.

17. *Executions*.—There were two, one Chinese.

18. *Transfers to Lunatic Asylum*.—There were seven from the Criminal Prison.

TAN TOCK SENG'S HOSPITAL, SINGAPORE.

REPORT BY DR. J. R. McVAIL, M.B., Ch. B., *Medical Officer*.

I. *Work done*:—

Remained on 31st December, 1916	...	...	518
Admitted during 1917	...	...	9,034
		Total	9,552
Discharged	...	...	7,633
Died	...	...	1,307
Remained on 31st December, 1917	...	...	612
		Total	9,552

2. The average daily sick was 561·67 as compared with 488·92 in 1916.
3. The percentage of deaths to total cases treated during the year was 13·68.
4. There were 1,307 deaths during the year. Of these the number dying within 24 hours of admission was 201. Deducting these the death-rate is 11·58.
5. The average daily stay in hospital of those discharged was 26·45 days, of those died 32·72 days and of those remaining 93·68 days. The corresponding figures for last year were of those discharged 22·21 days, of those died 28·99 days, and of those remaining 81·03 days.
6. *Malaria*.—Two thousand five hundred and seventy-one cases of Malaria were treated during the year. The number of cases remaining in hospital at the end of the year was 85. There were 187 deaths giving a mortality of 7·27 per cent.

<i>Types of Malaria.</i>		<i>Total cases treated.</i>	<i>Deaths.</i>
Benign Tertian	...	256	12
Quartan	...	137	3
Malignant Tertian	...	870	24
Chronic	...	321	6
Mixed	...	57	—
Unclassified	...	930	40
Total	...	2,571	85

Systematic blood examinations were carried out in all cases. The following results were obtained:—

Malignant Tertian	...	...	...	1,246
Benign Tertian	...	...	...	417
Quartan	...	...	...	191
Mixed	...	...	...	120
Negative	...	...	...	2,381
Total	...	...	...	4,355

7. *Dysentery*.—There were 580 cases of Dysentery treated during the year. Of these, 254 cases died showing a death-rate of 43·79 per cent.

8. *Beri-beri*.—Four hundred and seventy-three cases of Beri-beri have been under treatment during the year. Twenty-seven cases remain in hospital at the end of the year. There were 124 deaths giving a mortality of 26·22 per cent. Sixty-six cases of chronic type were transferred to Pasir Panjang Hospital. The number of cases admitted during the year was 443. The following table shows their nationalities:—

<i>Nationalities.</i>		<i>Cases.</i>	<i>Deaths.</i>
Chinese	...	429	20
Malays	...	10	5
Indians	...	2	1
Japanese	...	30	—
Others	...	2	1
Total	...	473	27

9. *Enteric Fever*.—Among 33 cases of Enteric Fever treated during the year, there were 19 deaths, shewing a death-rate of 57·58 per cent. Last year the mortality was 45·45 per cent.

10. *Venereal Diseases*.—Venereal Diseases were as follows:—

		<i>Cases.</i>	<i>Deaths.</i>
		—	—
Syphilis, Primary	... ..	62	—
„ Secondary	... ..	637	52
„ Tertiary	... ..	113	18
„ Arthritis	... ..	8	1
Gonorrhœa	... ..	140	—
Soft Chancre and Bubo	... ..	235	—
		—	—
Total	... ..	1,195	71
		—	—

These figures refer only to cases uncomplicated by other diseases or where the other disease was of minor significance. Progress has been made in connection with the diagnosis and treatment of Venereal Diseases during the year.

1. Syphilis.

Dr. FINLAYSON, the Government Pathologist, has examined weekly on an average, the blood of at least twenty patients for the Wasserman Reaction. As a rule these are the more or less doubtful cases. Fully half of them have been positive. In cases that are considered hopeful the following procedure is adopted:—

1. A Pot. Permang. mouth wash.
2. M. Alba daily.
3. Daily Baths.
4. Ung. Hydrag. rubbed into the back daily.
5. Three intravenous injections of .45 gram Novarsenobensol at intervals of a week.

2. Gonorrhœa.

An old operating table was placed in Ward 5 and an irrigator was fitted up. About a dozen cases are irrigated twice-daily with, as a rule, Pot. Permang. solution.

11. *Helminthiasis*.—Two hundred and fifty-four cases of Ankylostomiasis were treated during the year. Twenty-seven cases remain in hospital at the end of the year.

There were 51 deaths giving a mortality of 20.08 per cent. Three cases of Shistosomiasis were treated during the year all of which died.

Two thousand four hundred and four stools were examined during the year with the following results:—

Ankylostomiasis ova	... ..	486
Round-worm ova	... ..	248
Whip-worm ova	... ..	149
Round and whip-worm ova	... ..	60
Ankylostomiasis and Round-worm ova	... ..	73
Ankylostomiasis and Whip-worm ova	... ..	71
Ankylostomiasis Whip and Round-worm ova	... ..	25
Negative	... ..	1,292
		—
Total	... ..	2,404
		—

12. *Tuberculosis, General and Pulmonary*.—Out of 477 cases of Tuberculosis treated during the year, there were 387 Pulmonary and 90 General. Two hundred and forty-nine cases died making a death rate of 52.2 per cent.

13. *Ulcers*.—One thousand and thirty-three cases of ulcers were treated during the year. Sixty-four cases remain in hospital.

14. *Plague*.—There were three cases of plague during the year all of whom died.

15. Surgical operations to the number of 1,395 were performed during the year.

16. *Medico-legal*.—Twenty-five dead bodies were sent by the Coroner for post-mortem examination. Four hundred and forty-one cases were sent by the Police for treatment.

17. *European Ward*.—One hundred and thirty-seven cases were treated in the European Ward. The nationalities were as follows:—

<i>Nationality.</i>					<i>Cases.</i>
Europeans	...	...	...	...	38
Eurasians	...	...	...	...	66
Others	...	...	...	...	33

18. *Japanese*.—The number of patients treated during the year was 553. There were 10 deaths among them giving a death rate of 1·81 per cent. The mortality for last year was 2·02 per cent.

19. Dr. ADAMS acted as Medical Officer and Surgeon, Native Hospitals, till my return on 17th June, 1917, when I took over the surgical work. Since September 31st I have been Medical Officer in charge of Tan Tock Seng's Hospital in addition.

On account of the frequent changes in the Staff of Assistant Surgeons the wards have had to be distributed among them on an average three times every two months. No doubt unavoidable but none the less very unsatisfactory both for the patients and Assistant Surgeons.

20. An attempt is being made to resuscitate the scheme for training dressers. It had fallen into abeyance on account of want of staff. Some progress is being made but until the dressers' tutor is definitely appointed it can only be tentative.

21. The Principal Civil Medical Officer visited and inspected the Hospital, and Male and Female Leper Camps on fourteen occasions. The Committee of Tan Tock Seng's Hospital made 13 visits of inspection.

LUNATIC ASYLUM.

REPORT BY DR. H. J. GIBBS, M.R.C.S., L.R.C.P., *Medical Superintendent*.

1. There remained on 31st December, 1916, 257 males and 76 females. Two hundred and twenty-three males and 45 females were admitted in 1917 (which is the highest on record), making a total treated of 501 patients.

2. Of the admissions 16 males and 7 females had been previously under treatment in this asylum.

3. Of the total treated 85 males and 18 females were discharged recovered; 12 males and 6 females relieved; 12 males and 21 females not improved; 7 males absconded; 59 males and 14 females died.

4. There remained on the 31st December, 1917, 305 males and 62 females.

5. The average daily numbers resident were 286 males and 75 females.

6. The maximum and minimum numbers were 397 and 330 respectively.

7. *Admissions*.—The nationalities of the admissions were:—

					<i>Males.</i>	<i>Females.</i>
					—	—
British	...	...	...	...	7	—
Other Europeans	...	...	...	...	3	1
Eurasians	...	...	...	...	2	3
Japanese	...	...	...	...	4	2
Chinese	...	...	...	...	157	27
Malays	...	...	...	...	12	7
Tamils	...	...	...	...	24	5
Other Asiatics	...	...	...	...	14	—

8. Of the admissions:—

Males. *Females.*

131	32	came from	Singapore.
50	9	„	Penang.
12	1	„	Province Wellesley.
16	1	„	Malacca.
4	—	„	Kuala Lumpur.
6	2	„	Johore.
1	—	„	Muar.
3	—	„	Labuan.

9. The physical condition of the admission is shown as:—

					<i>Males.</i>	<i>Females.</i>
					—	—
Good	...	...	...	...	48	14
Fair	...	...	...	...	75	18
Impaired	...	...	...	...	78	10
Greatly impaired	...	...	...	...	22	3

10. Ten of the admissions died within a month of their admission.

11. As to the causes assigned for the mental breakdown in the admissions venereal diseases head the list with 67; of these, 64 were males and 3 were females.

12. Alcoholic intemperance accounts for 26.

13. Twelve males and one female were general paralytics, all Asiatics.

14. *Discharges*.—Of the 33 shown as not improved 7 males and 18 females were transferred on 31st August, 1917, to the Federated Malay States Central Asylum at Tanjong Rambutan.

15. The recovery rate of 38.43 is good.

16. *Criminal Population*.—There remained on 31st December, 1916, seven lunatic criminals and 22 criminal lunatics, two of the latter being females. During 1917 9 lunatic criminals and one criminal lunatic, all males, were admitted.

The sentences of two lunatic criminals expired, two recovered and they were returned to complete their sentences in the Criminal Prison, and 3 died. Of the criminal lunatics 5 recovered and were returned to the Civil Prison to await the decision of His Excellency the Governor and 3 died.

There remained on 31st December, 1917, 9 lunatic criminals and 15 criminal lunatics.

17. *Deaths*.—The death-rate on the average daily number resident was 20.22 per cent, this is higher than that for 1916, but lower than that for 1915. On the average for 30 years, viz., 28.40, it compares very favourably.

Dysentery, Tuberculosis and General Paralysis of the Insane accounted for 30 of the deaths. I regret to have to record the death by Asphyxia from suicidal hanging of one of the male patients on 6th February, 1917.

One patient, male, died from shock following a ruptured spleen the result of a blow struck by a fellow inmate. The deceased's spleen was greatly enlarged and diseased.

18. There were no cases of Zymotic Disease.

19. *Casualties*.—The majority of these were trifling. There were four fractures the result of accidental falls, or from self-inflicted violence.

20. *Industries*.—Six thousand eight hundred and sixty-four yards of cotton cloth were woven by the male patients from which 1,598 bajus, 1,313 pairs of trousers for natives, 103 jackets and 115 pairs of trousers for Europeans, 233 bajus and 223 sarongs for women, 12 aprons, 60 pairs of bathing drawers, 4 chair covers, and 16 mattress covers were made by the female patients.

In addition, from canvas purchased, 33 strong rugs and 15 combination suits were made by the male patients.

21. A revenue of \$9,693.75 was derived from paying patients of which sum \$1,180.43 were from bills outstanding at the end of 1916, of the 1917 bills \$1,953.36 remained outstanding at the end of the year; of this amount already \$1,344.06 has been collected: about \$30 will probably have to be reckoned as a bad debt. This speaks volumes for the supervision exercised in the collection of the asylum bills. The sale of stores produced \$42.41.

22. The cost to the Government for the daily maintenance of the patients, European and Native, at this asylum was \$40.60; for the Straits Settlements patients at Tanjong Rambutan the maintenance rate was, as usual, \$35.36.

23. *General*.—The Bishop of Singapore takes a keen interest in the spiritual welfare of the Christian patients, and has held services and celebrated Holy Communion to those desiring it. These services were greatly appreciated by those present. The Roman Catholic priests also never fail to attend a call.

Clinical classes in psychology were attended by the students of King Edward VII Medical School in the months of June, July, August, October and November. The Staff has afforded every help and assistance. European Attendant J. McLAREN resigned on the grounds of ill-health on 17th October, 1917. I append the usual statistical tables.

TABLE I.
LUNATIC ASYLUM.

Table showing the Admissions, Discharges and Deaths during the Year 1917.

—	Male.	Female.	Total.	Male.	Female.	Total.
In the Asylum on 1st January, 1917	257	76	333
Cases admitted :—						
First Admissions	207	38	245
Not First Admissions	16	7	23
Total cases under care during the year	480	121	601
Cases Discharged :—						
Recovered
Relieved
Not Relieved
Absconded
Died
Total cases discharged and died during the year	175	59	234
Remaining in the Asylum on 31st December, 1917	305	62	367
Average number resident during the year	286	75	361

TABLE II.

LUNATIC ASYLUM.

Table showing the Admissions, Re-admissions, Discharges and Deaths from 31st December, 1888, to 31st December, 1917.

—		Male.	Female.	Total.	Male.	Female.	Total.
Remaining on the 31st December, 1888	...	...	...	...	176	32	208
Persons admitted during the period	...	...	...	...	4,769	840	5,609
Re-admissions	...	...	...	...	493	112	605
Total cases treated		...	...	...	5,438	984	6,422
Discharged Cases :—							
Recovered	...	2,146	326	2,472	...	...	...
Relieved	...	463	122	585	...	...	...
Not improved	...	390	118	508	...	...	...
Absconded	...	172	24	196	...	...	...
Died	...	1,962	332	2,294	...	...	...
Total cases discharged and died since 31st December, 1888		...	...	...	5,133	922	6,055
Remaining in the Asylum on 31st December, 1917		...	...	...	305	62	367

TABLE III.
LUNATIC ASYLUM.
Table showing the Admissions, Discharges and Deaths, with the Mean Annual Mortality and Proportion of Recoveries per cent on the Admissions for the Years 1886 to 1917 inclusive.

YEAR.	Admitted.			Discharged.						Absconded.			Died.			Remaining on 31st December of each Year.			Average Number Resident.			Percentage of Recoveries on Admissions.			Percentage of Deaths on the Average Number Resident.				
	Male.	Female.	Total.	Recovered.			Relieved.			Not Improved.			Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.		
				Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.																	
1886	...	...	164	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1887	173	17	190	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1888	153	23	176	35	9	44	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1889	186	24	210	67	6	73	13	4	17	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1890	224	30	254	87	7	94	23	1	24	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1891	162	30	192	61	13	74	12	3	15	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1892	158	29	187	71	14	85	15	4	19	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1893	184	33	217	65	7	72	8	5	13	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1894	169	24	193	60	11	71	21	4	25	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1895	173	34	207	70	9	79	45	10	55	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1896	202	28	230	86	16	102	7	2	9	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1897	122	26	148	62	9	71	18	7	25	17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1898	137	24	161	61	7	68	16	3	19	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1899	130	32	162	51	12	63	14	3	17	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1900	157	30	187	54	5	59	9	1	10	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1901	154	21	175	74	10	84	18	2	20	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1902	143	16	159	82	8	90	11	1	12	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1903	191	30	221	70	7	77	15	2	17	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1904	223	31	254	90	14	104	20	3	23	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1905	200	28	228	101	5	106	22	9	31	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1906	199	32	231	85	11	96	28	10	38	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1907	163	34	197	80	8	88	22	8	30	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1908	175	37	212	57	7	64	23	6	29	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1909	174	46	220	77	16	93	17	5	22	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1910	182	46	228	70	14	93	14	8	22	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1911	190	30	220	70	11	81	7	2	9	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1912	205	33	238	75	17	92	8	1	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1913	209	48	257	87	17	104	9	2	11	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1914	199	36	235	76	14	90	11	3	16	32	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1915	211	44	255	81	11	92	11	4	15	120	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1916	217	46	263	73	14	87	12	3	15	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1917	223	45	268	85	18	103	15	6	15	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE VI.

LUNATIC ASYLUM.

Table showing the Length of Residence of those Discharged, Recovered and of those who Died, during the Year 1917.

Length of Residence.				Recovered.			Died.		
				Male.	Female.	Total.	Male.	Female.	Total.
Under one month	...	...	...	4	...	4	9	1	10
From one to three months	...	...	...	16	2	18	8	1	9
„ three to six months	...	...	...	31	5	36	13	2	15
„ six to nine months	...	...	...	15	4	19	5	3	8
„ nine to twelve months	...	...	...	7	2	9	6	2	8
„ one to two years	...	...	...	8	3	11	11	3	14
„ two to three years	...	...	...	1	1	2	3	1	4
„ three to five years	...	...	...	1	1	2	4	...	4
„ five to seven years	...	...	...	1	...	1	...	...	...
„ seven to ten years	...	...	...	...	...	...	...	1	1
„ ten to fifteen years	...	...	...	1	...	1	...	...	...
„ twenty-five to thirty years	...	...	...	...	...	...	...	...	...
TOTAL ..				85	18	103	59	14	73

TABLE X-a.
LUNATIC ASYLUM.

Table showing the Probable Causes, Apparent or Assigned, of the Disorders in the Admissions, Discharges and Deaths of the Year 1917.

CAUSES.	ADMISSIONS.											
	Number of Instances in which a Cause was Assigned.											
	Admissions :—Male 223. Female 45. Total 268.											
	As Predisposing Cause.			As Exciting Cause.			As Predisposing or Exciting Cause.*			Total. †		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
<i>Moral.</i>												
Domestic Troubles (including loss of relatives and friends)	5	2	7	...	...	...	5	2	7
Adverse Circumstances (including business anxieties and pecuniary difficulties)
Mental Anxiety and Worry and Overwork	1	...	1	...	...	...	1	...	1
Religious Excitement
Love Affairs (including seduction)	2	...	2	...	...	...	2	...	2
Fright and Nervous Shock	1	1	...	...	...	...	1	1
<i>Physical.</i>												
Intemperance in Drink	25	1	26	...	...	...	25	1	26
Venereal Disease	64	3	67	64	3	67
Self-abuse
Sunstroke
Accident or Injury
Pregnancy	2	2	...	...	...	...	2	2
Parturition and the Puerperal State
Uterine and Ovarian Disorders	2	2	...	...	...	...	2	2
Lactation
Puberty	2	...	2	...	...	...	2	...	2
Epilepsy	4	1	5	...	...	...	4	1	5
Privation and Starvation	1	...	1	...	...	...	1	...	1
Heart Disease and Cardic-Vascular Changes ...	11	...	11	...	...	...	...	...	...	11	...	11
Phthisis	29	1	30	...	...	...	29	1	30
Malarial Fever	21	2	23	...	...	...	21	2	23
Typhoid Fever	1	...	1	...	...	...	1	...	1
Other Bodily Diseases or Disorders	6	5	11	...	...	...	6	5	11
Previous Attacks	18	9	27	...	...	...	...	...	...	18	9	27
Old Age	9	1	10	...	...	...	...	...	...	9	1	10
Morphia Habit (Opium)
Hereditary Influences ascertained	6	1	7	...	...	...	...	...	...	6	1	7
Congenital Defect	4	2	6	...	...	...	...	...	...	4	2	6
Indian Hemp Smoking
Unknown	65	18	83

* Where these could not be distinguished. † Some of the admissions are credited with more than one cause; therefore, the sum of the "known" and "unknown" exceeds that of the admissions.

TABLE X-6.

LUNATIC ASYLUM.

Table showing the Probable Causes, Apparent or Assigned, of the Disorders in the Admissions, Discharges and Deaths of the Year 1917.—Continued.

CAUSES.	DISCHARGES.											
	Number of Instances in which a Cause was Assigned.											
	Discharges :—Male 116. Female 45. Total 161.											
	As Predisposing Cause.			As Exciting Cause.			As Predisposing or Exciting Cause.*			Total.†		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
<i>Moral.</i>												
Domestic Troubles (including loss of relatives and friends)	3	1	4	...	...	...	3	1	4
Adverse Circumstances (including business anxieties and pecuniary difficulties)	2	...	2	...	...	...	2	...	2
Mental Anxiety and Worry and Overwork
Religious Excitement
Love Affairs (including seduction)	1	...	1	...	...	...	1	...	1
Fright and Nervous Shock
<i>Physical.</i>												
Intemperance in Drink	30	1	31	...	...	...	30	1	31
Venereal Disease	29	8	37	29	8	37
Self-abuse
Sunstroke	2	...	2	...	...	...	2	...	2
Accident or Injury
Pregnancy
Parturition and the Puerperal State	1	1	...	...	...	...	1	1
Uterine and Ovarian Disorders	1	1	...	...	...	...	1	1
Lactation	1	1	...	...	...	...	1	1
Puberty	1	...	1	...	...	...	1	...	1
Epilepsy	3	2	5	3	2	5
Privation and Starvation	1	1	2	...	...	...	1	1	2
Heart Disease	7	1	8	...	...	...	...	...	7	1	8
Phthisis	4	4	8	...	...	...	4	4	8
Malarial Fever	23	1	24	...	...	...	23	1	24
Typhoid Fever
Other Bodily Diseases or Disorders	4	5	9	...	...	...	4	5	9
Previous Attacks	12	7	19	...	...	...	...	...	12	7	19
Old Age	3	2	5	...	...	...	...	...	3	2	5
Opium	2	1	3	...	...	...	2	1	3
Hereditary Influences ascertained	8	7	15	...	...	...	...	...	8	7	15
Congenital Defect	3	3	...	...	...	...	...	...	3	3
Indian Hemp Smoking
Unknown	17	7	24

* Where these could not be distinguished. † Some of the discharges are credited with more than one cause; therefore, the sum of the "known" and "unknown" causes exceeds that of the discharges.

TABLE X-c.

LUNATIC ASYLUM.

Table showing the Probable Causes, Apparent or Assigned, of the Disorders in the Admissions, Discharges and Deaths of the Year 1917.—Continued.

CAUSES.	DEATHS.											
	Number of Instances in which a Cause was Assigned.											
	Deaths:—Male 59. Female 14. Total 73.											
	As Predisposing Cause.			As Exciting Cause.			As Predisposing or Exciting Cause.*			Total. †		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
<i>Moral.</i>												
Domestic Troubles (including loss of relatives and friends)	1	1	2	...	...	...	1	1	2
Adverse Circumstances (including business anxieties and pecuniary difficulties)	1	...	1	...	...	...	1	...	1
Mental Anxiety and Worry and Overwork
Religious Excitement
Love Affairs (including seduction)
Fright and Nervous Shock
<i>Physical.</i>												
Intemperance in Drink	2	...	2	...	...	...	2	...	2
Venereal Disease	32	5	37	32	5	37
Self-abuse
Sunstroke
Accident or Injury
Pregnancy
Parturition and the Puerperal State
Uterine and Ovarian Disorders
Lactation
Puberty
Epilepsy	1	1	...	...	...	...	...	...	...	1	1
Privation and Starvation	1	...	1	...	...	...	1	...	1
Heart Disease and Cardio-Vascular Changes ...	8	1	9	...	...	...	...	...	...	8	1	9
Phthisis	24	1	25	...	...	...	24	1	25
Malarial Fever
Typhoid Fever
Other Bodily Diseases or Disorders	7	...	7	...	...	...	7	...	7
Previous Attacks	3	...	3	...	...	...	...	...	...	3	...	3
Old Age	5	2	7	...	...	...	...	...	...	5	2	7
Opium
Hereditary Influences ascertained
Congenital Defect	1	1	...	...	...	...	...	...	...	1	1
Indian Hemp Smoking
Unknown	5	5	10

* Where these could not be distinguished. † Some of the deaths are credited with more than one cause; therefore, the sum of the "known" and "unknown" causes exceeds that of the deaths.

TABLE XI.

LUNATIC ASYLUM.

Showing the Form of Mental Disorder on Admissions and Deaths of the Year 1917, and the Form of Mental Disorder of the Inmates on 31st December, 1917.

FORM OF MENTAL DISORDER.	Admissions.			Recoveries.			Deaths.			Remaining in Asylum.		
	Admissions.			Recoveries.			Deaths.			Form of Mental Disorder, 31st December, 1915.		
	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Congenital or Infantile Deficiency with Epilepsy	...	1	1	...	...	...	...	1	1	3	...	3
Do. without Epilepsy	6	1	7	1	1	2	1	...	1	19	2	21
Epilepsy acquired ...	4	...	4	2	...	2	...	...	...	6	2	8
General Paralysis of Insane	12	1	13	...	...	...	18	...	...	6	1	7
Mania, Acute	147	35	182	63	13	76	27	5	32	136	30	166
Do. Acute, Delirious	1	...	1	...	...	...	1	...	1	...	...	...
Do. Chronic	...	...	...	...	...	...	...	1	1	6	1	7
Do. Recurrent	1	...	1	1	...	1	...	...	...	2	3	5
Do. A Potu	15	...	15	11	...	11	1	...	1	11	...	11
Do. Puerperal	...	...	...	...	...	...	...	...	...	...	1	1
Do. Senile	...	...	...	...	...	...	...	...	1	1	...	1
Melancholia, Acute	24	5	29	2	4	6	2	1	3	28	2	30
Do. Chronic	...	...	...	1	...	1	...	...	...	1	1	2
Do. Recurrent	...	...	...	...	...	...	...	...	...	...	...	...
Do. A Potu	1	...	1	1	...	1	...	...	...	...	...	...
Do. Puerperal	...	...	...	...	...	...	...	...	...	...	...	...
Do. Senile	...	...	...	...	...	...	...	...	...	...	...	...
Delusional Insanity	6	1	7	2	...	2	...	...	...	8	1	9
Dementia, Primary	...	1	1	...	...	...	3	3	6	16	6	22
Do. Secondary	4	...	4	...	...	...	3	1	4	50	6	56
Do. Senile	1	...	1	...	...	...	2	...	2	5	1	6
Do. A Potu	1	...	1	1	...	1	...	...	...	2	...	2
Do. Organic...	...	...	...	...	...	...	1	...	1	5	5	10
Not Insane on Admission	...	...	...	...	...	...	...	...	...	...	...	...
Delirium from Fever	...	...	...	...	...	...	...	...	...	...	...	...
TOTAL	223	45	268	85	18	103	59	14	73	305	62	367

TABLE XIII.

LUNATIC ASYLUM.

Showing Occupation of Admissions.

Occupation.	Male.	Female.	Total.	Occupation.	Male.	Female.	Total.
				<i>Brought forward ...</i>	92	5	97
Actor ...	1	...	1	Merchant, copra ...	1	...	1
Boatman ...	2	...	2	Mandore ...	1	...	1
Broom seller ...	1	...	1	Mason ...	1	...	1
Betel-nut seller ...	3	...	3	Mendicant ...	3	...	3
Cake seller ...	1	...	1	Nil ...	7	3	10
Cloth seller ...	1	...	1	Petty-trader ...	4	...	4
Carpenter ...	7	...	7	Pig-rearer ...	1	...	1
Cook ...	15	...	15	Pine-apple carrier ...	1	...	1
Clerk ...	6	...	6	Plank carrier ...	1	...	1
Cooly ...	9	...	9	Painter ...	1	...	1
" Coal ...	5	...	5	Prostitute ...	...	3	3
" Changkol ...	2	...	2	Peon telegraph ...	1	...	1
" Lemonade factory ...	1	...	1	Physician ...	1	...	1
" Oil ...	1	...	1	Planter, coconut ...	2	...	2
" Rubber estate ...	1	1	2	" Rubber ...	2	...	2
" Saw-mill ...	1	...	1	" Vegetable ...	6	...	6
" Shop ...	1	...	1	Postmaster-General ...	1	...	1
" Sampan ...	1	...	1	Rubber tapper ...	15	...	15
" Timber ...	1	...	1	Runner ...	1	...	1
" Tin mining ...	2	...	2	'Rikisha puller ...	7	...	7
Dhoby ...	1	...	1	Shop Assistant ...	1	...	1
Domestic ...	3	...	3	" keeper ...	2	...	2
Dresser ...	2	...	2	Sinkeh ...	2	...	2
Egg seller ...	1	...	1	Soldier ...	2	...	2
Engineer ...	1	...	1	Street vendor ...	1	...	1
Estate owner ...	1	...	1	Superintendent, Govern- ment Printing Office...	1	...	1
Earth carrier ...	1	...	1	Shoemaker ...	1	...	1
Fisherman ...	2	...	2	Student ...	2	...	2
Fishmonger ...	2	...	2	Sweeper ...	2	...	2
Forest Ranger ...	1	...	1	Sawyer ...	2	...	2
Grasscutter ...	3	...	3	Time-keeper ...	1	...	1
Goldsmith ...	3	...	3	Tin miner ...	1	...	1
Hawker ...	3	...	3	Tram car conductor ...	1	...	1
Housewife ...	...	4	4	Teacher ...	2	1	3
House builder ...	2	...	2	Tailor ...	3	...	3
Ice seller ...	1	...	1	Tali clerk ...	2	...	2
Lawyer ...	1	...	1	Unknown ...	45	33	78
Manager, Rubber estate ...	1	...	1	Watchman ...	3	...	3
Merchant, cigar ...	1	...	1				
<i>Carried forward ...</i>	92	5	97	TOTAL ...	223	45	268

BERI-BERI HOSPITAL, PASIR PANJANG.

REPORT BY DR. H. J. GIBBS, *Medical Superintendent.*

1. There remained on 31st December, 1916, forty-six patients.
2. One hundred and eighty-six were admitted in 1917, giving a total treated of two hundred and thirty-two.
3. Of these admissions 10 were from the General Hospital, 147 from the Tan Tock Seng's Hospital, and 29 applied for admission at the hospital.
4. The nationalities of the admissions with their respective numbers were:—

European	...	...	...	...	...	1
Eurasian	...	...	...	...	...	2
Chinese	...	...	...	...	...	170
Japanese	...	...	...	...	...	9
Siamese	...	...	...	...	...	1
Tamil	...	...	...	...	...	2
Bengali	...	...	...	...	...	1

5. Fifty-one of the admissions were from rubber estates and eighteen were carpenters.

6. Of the total treated, 102 were discharged, 2 were transferred to the General Hospital, 12 absconded, and 5 died.

7. Of the discharges 2 had recovered sufficiently to warrant a cure, 99 had improved considerably and 1 had not improved.

8. One hundred and eleven patients remained in hospital on 31st December, 1917.

9. *Admissions.*—Of the one hundred and eighty-six admissions four cases of Malaria, three gave a history of previous Syphilis, and improved considerably under specific treatment, eight suffered from Pulmonary Tuberculosis, and the remaining 171 were typical cases of Beri-beri. Three of the Beri-beri cases were of the œdematous variety (of which one died), 9 had wrist drop, 50 had ankle drop, 1 had both ankle and wrist drop.

10. Nineteen of the admissions contracted Dysentery during their residence. All recovered.

11. *Deaths.*—Three of the five deaths were from Beri-beri, one from Malaria and the fifth from Pulmonary Tuberculosis.

12. There were no deaths from or attempts at suicide during the year under review.

13. Eleven visits of inspection were made by the Principal Civil Medical Officer; of these, two were by appointment and nine of surprise.

KANDANG KERBAU HOSPITAL FOR FEMALES.

REPORT BY MR. F. RODRIGUEZ, *Assistant Surgeon in charge.*

Work done:—

Remained on 31st December, 1916	...	...	...	71
Admitted during the year	...	...	...	436
			Total	507
Discharged	...	...	...	372
Died	...	...	...	76
Remaining on 31st December, 1917	...	...	...	59

The nationalities of those admitted were:—

Europeans and Eurasians	...	...	...	29
Japanese	...	...	...	57
Chinese	...	...	...	251
Malays	...	...	...	13
Indians	...	...	...	82
Others	...	...	...	4

The average daily sick was 75·92 and the death-rate 14·99 per cent.

Of the 76 deaths, 14 died within 48 hours of admission: Eliminating these, the death-rate would be 12·22.

The principal diseases treated were:—

Malaria	...	...	...	53
Venereal	...	...	...	109
Dysentery	...	...	...	14
Phthisis	...	...	...	23
Bright's Disease	...	...	...	12
Skin Diseases	...	...	...	19
Injuries	...	...	...	17

All major operation cases were sent to the General Hospital: the minor operations done here included uterine curettage, enucleation of glands, opening of abscesses, etc.

Out-patients.—These numbered 4,817 cases from among Government servants and their families with 6,633 attendances.

HEALTH OF SINGAPORE POLICE FORCE.

REPORT BY DR. J. W. ADAMS, *Acting Police Surgeon.*

During the year there were 320 admissions to Hospital, as against 306 in 1916. The 320 were made up as follows:—

Europeans	...	...	...	4
Sikhs	...	...	...	133
Malays	...	...	...	104
Indians other than Sikhs	...	...	...	65
Chinese	...	...	...	15
Eurasians	...	...	...	—
Total				320

Of the above 88 admissions were for injuries as many as 36 for various forms of venereal and 27 from unspecified.

The total number of out-patients was 3,294 against 3,303 in 1916.

No European Officers were invalided in 1917 or 1916.

There were no deaths of European Officers during the year.

The figures given above though they do not vary much in any year—cannot give a very fair criticism of health owing to the great disinclination of the Malays and in many cases the Chinese also—of going to Hospital. They far prefer to be attended at their own homes in their own way and be fined for absence.

Return shewing the number of recruits enlisted from 1st January to 31st December, 1917:—

Europeans	...	...	...	—
Eurasians	...	...	...	—
Sikhs	...	...	...	23
Malays	...	...	...	85
Javanese and others	...	...	...	14
Indians other than Sikhs	...	...	...	38
Chinese	...	...	...	35

APPENDIX B.

PENANG.

REPORT BY DR. J. GRAY, B.A., M.B., B.Ch., *Acting Chief Medical Officer.*

Statistics.—Population:—Estimated mean annual 149,792.

Birth-rate:—For 1915: 27·93; for 1916, 27·11; for 1917, 29·48.

Death-rate:—For 1915: 30·71; for 1916, 30·10; for 1917, 35·72.

Infantile Mortality:—1910. 1911. 1912. 1913. 1914. 1915. 1916. 1917.
 — — — — — — —
 197 201 186 208 198 203 165 229

Table II shows for Penang Island Hospitals the figures for some important diseases:—

Diseases.	1914.		1915.		1916.		1917.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Phthisis	303	154	309	174	264	127	272	145
Typhoid	13	6	...	...	...	...	11	4
Diarrhoea	229	53	136	8	151	6	140	4
Dysentery	319	92	342	129	496	117	406	119
Ankylostomiasis	116	36	197	34	251	37	306	63
Syphilis	437	1	779	4	966	41	836	36
Gonorrhoea	118	...	218	1	272	...	157	...
Ulcers of Genl. Org. ...	146	...	14	...	88	...	205	...
Tetanus	2	2	6	6	3	2	6	3
Small-pox ... ..	...	...	28	5	131	38	39	10
Cholera	6	5	...	...	1	1	14	8
Plague ... ..	...	...	1	1	4	3	6	4
Malaria	1,119	84	1,111	57	1,677	106	1,493	118
	7,550		3,560		4,782		4,305	

I have been acting as Chief Medical Officer throughout the year. Dr. HARRISON was transferred to Malacca on 1st September, 1917. Dr. DODDS arrived from Malacca on 3rd September, 1917, and assumed duty as Medical Officer, General Hospital, Penang.

QUARANTINE CAMP, JELUTONG.

Two hundred and thirty-two cases were treated during the year, viz.: Small-pox 43, Chicken-pox 41, Measles 23, Plague 23, Cholera 1, Acute Enteritis 1, Observation 13 and Contacts 107. There were 13 deaths during the year, viz: Small-pox 7, Chicken-pox 1, Measles 1, Plague 2, Cholera 1, Acute Enteritis 1. The death-rate was 5·60, while the average number was 11·50.

GENERAL HOSPITAL, PENANG.

1. The following table shows the total number of cases treated in all wards during the past four years:—

Year.	European Wards.	Died.	Percentage.	Native Wards.	Died.	Percentage.
1914 ...	531	...	3.06	2,205	...	5.52
1915 ...	334	...	1.8	2,207	...	3.9
1916 ...	331	9	2.7	2,124	142	6.68
1917 ...	350	19	5.4	2,284	165	7.2

(The percentage of deaths to total treated for years 1914 and 1915 is exclusive of deaths occurring within 48 hours of admission).

2. Of the above 19 deaths in the European Wards 4 took place within 48 hours of admission and of the deaths in the Native Wards 45 within 48 hours of admission. Deducting these, the death-rate for the European Wards was 4.2 per cent and for the Native Wards 6.3 per cent.

3. During the year under report 492 cases were sent in by the Police for free treatment.

European and Native Wards.

4. The average daily sick was, males 66.78 and females 6.18. The average stay in hospital of those discharged was 24.37 days, of those remaining 40.40 and of those dying 16.16 days.

5. The chief diseases treated were as follows:—

Malaria	...	...	...	...	...	302
Venereal	...	...	...	...	...	252
Dysentery	...	...	...	...	...	68
Phthisis	...	...	...	...	...	62
Ankylostomiasis	...	...	...	...	...	41
Enteric Fever	...	...	...	...	...	8
Beri-Beri	...	...	...	...	...	21
Injuries	...	...	...	...	...	295

6. The chief causes of deaths were:—

Malaria	...	...	...	...	...	14
Dysentery	...	...	...	...	...	8
Pneumonia	...	...	...	...	...	18
Phthisis	...	...	...	...	...	18
Ankylostomiasis	...	...	...	...	...	7

On several occasions the second class Male Ward has been taxed to its utmost, patients being temporarily lodged in the European Ward of the District Hospital until such time as accommodation could be found for them in the General Hospital.

Venereal Ward.

During the year 86 cases were admitted as compared with 154 in 1916. At the beginning of 1917 there remained in Hospital 14 patients making a total of 100 treated in all. Of these 73 per cent were Chinese. Of the total treated 56 per cent were suffering from Venereal Disease of which 55 per cent were prostitutes. There were only 9 Japanese patients admitted during the year. There were 3 deaths with a percentage of 3 to total treated. The causes were Tertiary Syphilis, Valvular Disease of Heart and Enteritis.

REPORT ON SURGERY AT THE GENERAL HOSPITALS, PENANG, DURING 1917.

REPORT BY DR. J. GRAY, B.A., M.B., B.Ch., *Surgeon-in-charge.*

MAJOR CASES.		Total.	Cured.	Relieved.	Not improved.	Died.	Remaining.
Exploratory Laparotomy ...	...	20	8	3	5	3	1
Herniotomy ...	...	29	27	...	...	1	1
Appendectomy ...	...	8	6	...	...	1	1
Incision and drainage—Appendix abscess		5	4	...	...	...	1
Gastro-enterostomy ...	...	3	3	...	...	...	...
Cholecystostomy ...	...	1	...	...	...	1	...
Incision and drainage Hepatic Abscess		3	3	...	...	...	...
Colostomy ...	...	1	...	1	...	...	...
Hysterectomy ...	...	2	1	...	...	...	1
Ovariectomy ...	...	4	3	...	...	1	...
Salpingectomy ...	...	1	1	...	...	...	...
Salpingo-Oophorectomy ...	...	1	1	...	...	...	...
Alexander's Operation ...	...	1	...	...	1	...	...
Excision—Cancer from Cervixuteri		1	...	...	...	...	1
Perineorrhaphy ...	...	1	...	...	1	...	...
Cooper's Operation ...	...	1	1	...	...	...	...
Supra-pubic Cystotomy ...	...	4	2	...	...	2	...
External Urethrotomy ...	...	3	1	2	...	...	...
Urethral lithotomy ...	...	2	2	...	...	...	...
Complete Amputation—penis		1	1	...	...	...	...
Wiring—patella ...	...	1	1	...	...	...	...
Amputation—Upper Extremity		9	8	...	1	...	...
" Lower "		9	8	...	...	1	...
Osetotomy—Femur ...	...	2	2	...	...	...	...
Plastic Operation for dislocated patella		2	1	...	...	...	1
Radical Cure—Hydrocele ...	...	2	2	...	...	...	...
Whitehead's operation ...	...	2	2	...	...	...	...
Ligature Haemorrhoids ...	...	3	3	...	...	...	...
Excision "	...	8	8	...	...	...	...
" Testes		1	1	...	...	...	...
" Vulva (elephantiasis)		1	1	...	...	...	...
Plastic Operation Scrotum (elephantiasis)		2	2	...	...	...	...
Excision Vulva (ulcerated)		1	1	...	...	...	...
Extraction—Cataract ...	...	7	7	...	...	...	...
Total ...		142	111	6	8	10	7
Minor Operations ...		455	280	145	5	9	16
Grand Total ...		597	391	151	13	19	23

In addition to the above many cases of wounds brought by the police were sutured, dislocations reduced and cases examined under Chloroform. None of the cases call for special comment.

PRISON HOSPITAL.

REPORT BY DR. J. GRAY, *Acting Chief Medical Officer.*

1. The sanitary condition of the prison and the general health of the prisoners were satisfactory.

2. There remained four patients at the end of 1916 while 285 patients were admitted during the year making a total of 289 patients treated as compared with 359 of the preceding year.

3. The daily average sick was 7.48 as compared with 6.42 in 1916.

4. There were only five deaths during the year as compared with 13 of the preceding year while the death-rate was 1.73.

5. The deaths were due to:—

Dysentery ...	...	...	...	...	1
V. D. N. ...	...	...	...	...	1
Chronic Nephritis ...	...	...	...	...	1
Ankylostomiasis ...	...	...	...	...	2

6. Twenty vagrants were admitted during the year of whom 2 died.

7. The principal diseases treated were:—

Malarial Fever ...	...	...	...	...	51
Diarrhœa ...	...	...	...	...	51
Wounds ...	...	...	...	...	36
Dysentery ...	...	...	...	...	9
Eye Diseases ...	...	...	...	...	9
Phthisis ...	...	...	...	...	11

8. *Staff.*—Assistant Surgeon P. MEHTA and Dresser S. MUTHIA worked during the year.

DISTRICT HOSPITAL, PENANG.

REPORT BY DR. J. V. PESTANA, *Medical Officer in charge.*

1. There remained on 1st December, 1916, 361 patients and 4,136 were admitted during 1917 making a total of 4,497. The corresponding figures for 1916 were 357; 4,418 and 4,795 respectively.

2. The number of deaths during the year was 498 giving a death-rate of 12.04 per cent as compared with 449 and 10.13 in 1916.

3. Of the deaths 55 occurred within 24 hours of admission and 96 within 48 hours. Excluding these the death-rate would be 10.85 and 9.95 respectively.

4. The principal diseases treated were:—

Venereal Diseases ...	1,411	with 27 deaths and a death rate of	1.91	per cent.
Malaria ...	771	„ 58	„	7.52 „
Dysentery...	221	„ 92	„	41.62 „
Phthisis ...	172	„ 108	„	62.78 „
Ankylostomiasis ...	177	„ 32	„	18.07 „

5. The average daily sick was 365.14 as compared with 380.28 in 1916.

6. Six hundred and eleven operations were performed during the year.

FEMALE WARDS.

REPORT BY DR. J. GRAY, *Acting Chief Medical Officer.*

There were 221 admissions during the year as compared with 257 for 1916. There remained in hospital at the beginning of 1917, 20 patients making a total of 241 treated in all.

There were 39 deaths with a percentage of 16.1 to total treated.

The average daily number of patients was 22.57 and the average daily stay in hospital of those discharged was 25.14, of those remaining 297.1 and of those dying 21.08 days. The chief diseases and causes of deaths were:—

Dysentery	...	...	...	11 cases with 6 deaths
Phthisis	...	...	...	11 ,, 8 ,,
Malaria	...	...	...	22 ,, 5 ,,

The death-rate occurring in this ward is due to the fact that many of the patients are admitted in a dying condition. A large number of them is senile, while their immediate existence previous to entering hospital—the great majority are paupers—greatly handicaps them in their struggle for existence. The long stay of those remaining at the end of 1917, viz.: 297.1 days, is accounted for by the fact that this ward serves the purpose of an almshouse. One patient has now been an inmate for 346 days.

Ophthalmic Ward.

Two hundred and five patients were treated during the year of whom 178 were in-patients and 27 out-patients.

Fifteen operations were performed during the year with satisfactory results.

BALIK PULAU HOSPITAL.

REPORT BY DR. J. GRAY, *Acting Chief Medical Officer.*

Staff.—Assistant Surgeon N. N. MITRA was in charge up to the 19th January, 1917, and was succeeded by Assistant Surgeon H. MEHTA. Assistant Surgeon H. N. SARAVANAMUTHU succeeded Mr. MEHTA on 7th August, 1917, and was in charge until the end of the year.

Work done.—During the year 151 patients were admitted and with the 21 cases remaining from the previous year the total treated was 172 as compared with 310 of the previous year. The admission was much less this year as only paupers were admitted free of charge and others were charged 24 cents a day. Of the 172 cases 21 were paying patients. The total amount of hospital charges collected during the year was \$60.24. Of the 172 cases treated 169 were males and 3 females. The daily average of sick was 15.69 as compared with 25.58 of the previous year.

The principal diseases treated were:—

Ankylostomiasis	...	...	...	11 cases with 4 deaths
Beri-beri	...	...	...	3 ,, ,, 2 ,,
Bronchitis	...	...	...	7 ,, ,, 1 ,,
Dysentery	...	...	...	4 ,, ,, 0 ,,
Malaria	...	...	...	24 ,, ,, 3 ,,
Pneumonia	...	...	...	2 ,, ,, 0 ,,
Phthisis	...	...	...	3 ,, ,, 2 ,,
Syphilis	...	...	...	19 ,, ,, 4 ,,
Ulcers	...	...	...	37 ,, ,, 1 ,,

The following minor operations were done :—

Abscesses incised	...	...	...	...	2
Enucleation of glands	...	...	...	...	2
Extraction of teeth	...	...	...	...	1
Scraping of Ulcers	...	...	...	...	22
Incision for Cellutis	...	...	..	...	1
Total					28

Mortality.—The death-rate was 15·11 as compared with 9·11 of the preceding year. By deducting the three deaths which occurred within 24 hours of admission the death-rate becomes 13·37. The death-rate is rather high this year as only the bad cases were admitted into the hospital and the trivial cases were treated as out-door patients. Most of the deaths were due to Ankylostomiasis and Syphilis.

Infectious Disease.—Sixty-two cases of Small-pox, five cases of Chicken-pox and one case of Measles were reported in this district during the year. Of the 62 cases of Small-pox 31 were at Pulau Bentong. Thirteen cases of Small-pox died, *i.e.*, 20·96 per cent. Most of the fatal cases had never been vaccinated. Two thousand six hundred and sixty-nine re-vaccinations were done in this district during the year.

LUMUT HOSPITAL, DINDINGS.

REPORT BY DR. J. GRAY, *Acting Chief Medical Officer.*

Work done.—There were 591 admissions, which, with 31 remaining from the previous year, makes a total of 622, as against 533, being the maximum for the last ten years.

The principal disease treated was Malaria, of which there were 260 cases, the following were the types with deaths :—

Malaria, Benign Tertian	...	186 cases with 24 deaths
„ Sub-Tertian	...	7 „ 2 „
Quartan	...	1 „ 0 „
Cerebral	...	8 „ 6 „
Chronic	...	37 „ 3 „
Not differentiated	...	21 „ 1 „
	260	36

Of the 36 deaths 31 died within 24 hours of admission.

The greatest number of patients admitted in one month was 65 in October. The daily average number of patients was 25·50, as against 16·93 of last year.

Mortality.—There were 90 deaths, 25 patients died within 24 hours of admission. The admissions and deaths were as follows :—

	<i>Admissions.</i>		<i>Deaths.</i>	
Dindings	...	321	41	
Pangkor	...	13	2	
Sitiawan	...	257	47	
Total	...	581	90	

Infectious Diseases.—There were three cases of Enteric with three deaths from Sitiawan, where there was a serious outbreak during the fourth quarter 1917.

The Coroner sent in 15 cases for Autopsy.

General Remarks.—The Hospital was frequently over-crowded. The health of the Government Staff was better than last year.

Quinine in cachets and pills were freely distributed once a week at Pangkor, and twice a month at Bruas.

LEPER ASYLUM, PULAU JEREJAK.

REPORT BY DR. F. R. SAYERS, *Medical Officer in charge.*

I. *Statistics:*—

Remained on 31st December, 1916	...	(Colonial Perak Selangor Kedah	210 187 39 6)	442
Admitted during 1917	...	(Colonial Perak Selangor Kedah	68 18 11 5)	102
Total inmates		...		544
Discharged during 1917	...	Colonial	1	
Transferred during 1917	...	Colonial	1	
Absconded during 1917	...	(Colonial Perak	4 1)	5
Died during 1917	...	(Colonial Perak Selangor Kedah	59 32 11 3)	105
Remaining during 1917	...	(Colonial Perak Selangor Kedah	213 172 39 8)	432

The average daily number of inmates was 431·41.

The percentage of deaths was 19·30.

2. *Visits.*—Official visits were made during the year by:—The Hon'ble Resident Councillor, Penang, the Principal Civil Medical Officer, Straits Settlements, the Senior Medical Officer, Perak.

3. *Donation.*—The lepers received the usual New Year gift of 25 cents per man.

4. *Staff.*—Assistant Surgeon A. H. WHEATLEY relieved Assistant Surgeon F. W. F. CLARKE on the 16th December as resident Assistant Surgeon.

Colonial Dressers W. W. GASPER, PAHWAN BIN PACHIEE worked throughout the year. A. F. AROKIASAMY, KASSIM BIN CHEMAT were transferred and were replaced by V. SANTIAGO and D. C. D. ALMEIDA. Perak Dressers V. SITHAMPARAPILLAY, P. T. NAGARATNAM worked throughout the year. S. VALUPILLAY was transferred and replaced by J. D. CASSIM.

Selangor Dresser P. ARULAMPALAM was transferred and replaced by S. NALLATAMBY.

The health of the staff has been fair throughout the year.

There were a few cases of Malaria among the attendants.

5. *Inmates*.—(a) The general health of the inmates has been fair. (b) Treatment of Leprosy.—From June, six patients (5 Chinese and one Eurasian) were treated by injections of Sodium Gynocardate, as recommended by Sir LEONARD ROGERS. Of the total three showed slight improvement at the end of the year. (c) As a result of two organised robberies from inmates of the Asylum, 13 implicated ringleaders were removed on August 23rd to the cells at the Quarantine Station situated on the other side of Pulau Jerejak, one of them died in confinement.

The remainder await deportation to China.

There has not been any further insubordination at the Asylum.

6. *Buildings*.—A concrete drain replaced the clay drain around the Selangor Ward.

A concrete cistern to hold fresh water from an adjacent spring was built by the side of Ward No. 8.

LEPER ASYLUM, JELUTONG.

REPORT BY DR. J. GRAY, *Acting Chief Medical Officer*.

Twenty-seven cases remained at the end of 1916, and 10 cases were admitted making a total of 37 cases treated during the year.

There were six deaths during the year, the average stay of those who died being 1'41 year.

The intramuscular injections of Ol. Chalmoogra and Resorcin were discontinued during the latter part of the year, as the patients objected to the treatment and the result of the treatment was not very satisfactory.

APPENDIX C.

PROVINCE WELLESLEY.

REPORT BY DR. H. W. FURNIVALL, M.B., BAC. SURG. (DURHAM),
Medical and Health Officer in charge.

The public health of the Province has again been adversely influenced by a continuance of the Small-pox epidemic of 1916. The greatest number of cases, viz., 71, was in the month of February, and Quala Juru the early part of the year, Ara Rendang mid-year and Tassek Junjong the latter part of the year, were foci of endemicity. The total of cases for the year was 331, with 112 deaths, and a death-rate of 33'83 per cent, against 126 cases with 42 deaths, and 33'33 per cent death-rate in 1916.

But two cases of Cholera occurred with 2 deaths, against 10 in 1916. Chicken-pox had 38 victims, against 77 in 1916. Puerperal Fever and Vaccinia one each.

Infectious notifiable disease thus totalled 373 cases, against 213 for 1916.

Malaria.—There were 400 cases in the Government Hospitals with death-rate of 8.95 per cent, and 348 in Estate Hospitals, against 383 and 285 for year 1916. I place not much reliance on the figures for estates as microscopical work except on Caledonia is not an usual aid to diagnosis.

Ankylostomiasis.—There were 253 cases in our Government Hospitals with death-rate of 23 per cent. This disease showed a considerable decrease in cases in Government Hospitals—being 259 against 355 in 1916, but estate hospitals amounted to 188 against 106 in 1916, and it may be inferred from this, that this scourge is continuing to drain the health of the estate population. Towards the last quarter of the year I ordered a systematic examination of the stools of all patients in our Government Hospitals, and Sungei Bakap

reported over 90 per cent infected with hook-worm ova, Bukit Mertajam gave 14.50 per cent, Butterworth 28.36 per cent. The figures for Sungei Bakap are enlightening since it constitutes the only hospital to receive in-patients from a large number of estateless hospitals.

Diarrhœa and Dysentery.—There were 154 cases in Government Hospitals with death-rate of 33 per cent, and 185 in estate hospitals, the figures for the preceding year are slightly less in both instances, though the years 1914 and 1915 produced 377 and 260 cases in estate hospitals.

Phthisis.—Sixty-three cases were treated in our Government Hospitals with death-rate of 44 per cent, against 76 and 72 in 1916 and 1915.

Venereal Diseases totalled 256 against 316 in 1916.

Population.—The estimated mean for the year was 136,448 (excluding Immigrants and emigrants)—an increase of 573 over that for 1916. The birth-rate for the year was 32.86 per 1,000 and death-rate 28.66 per 1,000 against 30.23 and 25.61 per 1,000 in 1916, 32.49 and 26.17 per 1,000 in 1915, 32.67 and 28.03 per 1,000 in 1914.

There were 4,484 births in the year, an increase of 304 in 1916. The infantile mortality was 131 per 1,000 against 157 per 1,000 in 1916.

Vaccination.—Three thousand six hundred and forty-five primary vaccinations were performed by our own vaccinators with 2,900 perfect, 189 modified, 464 failures, and 92 not seen results. Secondary vaccinations done by us amounted to 10,022, but I have no accurate records of the results since it was not till towards end of the year that we commenced verifying this work, which was of course done in connection with the outbreak of Small-pox, and compares very favourably with the figures for 1916, viz., 1,683 primary and secondary vaccinations performed during the year by others totalled with 358 perfect, 209 modified, 176 failures and 38 not seen results.

History of the Small-pox epidemic.—This as I have stated was a continuance of that of the preceding year and was maintained by the nomadic habits of the indigenous section of the populations, and a great amount of concealment of the disease, although numerous prosecutions and fines to the amount of \$1,143.50 were inflicted. The last quarter of the year we inaugurated the procedure of collecting the names of every person in the vicinity of every freshly infected house, serving notices through the police on every householder calling up the people to a common rendezvous on a fixed date for re-vaccination; and in this way made much more effective this preventative measure. Fines to the amount of \$30.50 were inflicted by the Courts for non-compliance with the afore-mentioned notices.

I append tables giving interesting details of the incidence of types of the disease in relationship to the number of scars of previous vaccination; incidence of the disease generally among the sexes, races, and varying periods of life; monthly incidence of cases; and a table of births recorded, and vaccinations (primary) done during the past 5 years.

1917. Small-pox total cases 331.

A.—*Type of disease and vaccination scars and death incidence.*

Vaccination History.	Modified.	Discrete.	Confluent.	Hæmor-rhagic	Deaths.
One vaccination scar ...	...	2	1	...	3
Two " " ...	...	1	2	...	3
Three " " ...	...	2	4	2	8
Indistinct marks ...	...	...	3	...	3
Not vaccinated ...	...	9	65	4	78
Recently vaccinated ...	1	1	14	1	17
Deaths ...	1	15	89	7	112

B.—Incidence of types of cases against Vaccination history.

History.	Modified.	Discrete.	Confluent.	Hæmor- rahgic.	Total.
One vaccination scar ...	3	14	6	...	23
Two " " ...	5	13	5	...	23
Three " " ...	27	24	18	2	71
Indistinct marks ...	1	...	7	...	8
Not vaccinated ...	2	39	106	4	151
Recently vaccinated ...	15	17	22	1	55
	53	107	164	7	331

C.—Death-rate—33·83 per cent.

Sex incidence.	Number of cases.	Number of deaths.
Total males 	190	70
„ females 	141	42

D.—

Race incidence.	Number of cases.	Number of deaths.
Chinese 	14	6
Malays 	294	99
Indians 	23	7
Siamese 	Nil.	Nil.
	331	112

E.—

Age incidence.	Number of cases.	Number of deaths.
Under one year 	15	11
1 to 5 years 	13	3
5 to 15 years 	74	18
15 to 30 years 	138	50
Over 30 years 	91	30
Total 	331	112

F.—

Monthly incidence.				Number of cases.	Number of deaths.
January	...	...	...	27	8
February	...	...	...	71	24
March	...	...	...	59	18
April	...	...	...	26	10
May	...	...	...	37	9
June	...	...	...	28	6
July	...	...	...	12	6
August	...	...	...	10	5
September	...	...	...	24	9
October	...	...	...	18	10
November	...	...	...	12	4
December	...	...	...	7	3
Total ...				331	112

G.—Table of Births and Primary Vaccinations for last 5 years.

Year.				Births recorded.	Vaccination.	Ratio.
1913	...	...	...	3,957	3,723	94·08
1914	...	...	...	4,371	4,059	92·86
1915	...	...	...	4,359	3,784	86·80
1916	...	...	...	4,180	4,020	97·85
1917	...	...	...	4,484	3,645	81·29

Rainfall.—The average amount rainfall for 1917 was 2,129·94 millimetres, against 74·32 inches in 1916.

Water.—The Bukit Sereyah reservoir was very low in February and March necessitating a restriction of the supply, but from thence onwards it was regularly and abundantly maintained by a fairly heavy rainfall in Central District. Efforts to stop the wastage, and a supply of meters have had good results. Bukit Panchore reservoir continued to supply Nibong Tebal, Transkrian and Sungei Bakap districts in the South but the existing capacity of these two reservoirs falls far short of the needs of the Province. I understand the Federated Malay States Railway authorities have selected a site for a separate gathering ground and reservoir, and Government is contemplating securing other sources of an additional supply. Wells constitute the source of water to these parts not fed by the reservoir mains, and many of these in the Northern District have shewn sewage contamination on analysis.

Rural Board.—This body makes itself responsible for the scavenging in the main villages of the Province. The rubbish consisting mainly of decaying vegetable matter is disintegrated in incinerators of which the latest to be erected is at Sungei Rambei, and is intended for both Bukit Mertajam and Bukit Tengah villages. Bullock-drawn carts take away the refuse from the dust-bins of the villages, and Sungei Bakap and Bukit Tambun are the latest to obtain an improved type of this article.

Drainage.—Concrete drains were constructed of lengths varying from 104 to 380 feet in Bagan Tuan Kechil, Butterworth; Cross Street, Bukit Mertajam, Penaga; Tebing Tinggi, Simpang Ampat; and Teluk Ayer Tawar, Penaga.

BUTTERWORTH HOSPITAL.

1. *Buildings and ground.*—The ground has been in good order throughout the year. No major works were done by Public Works Department.

2. *Staff.*—Assistant Surgeon Mr. MUTTUKUMARU replaced Mr. DUTTA at the first part of July. Senior Dresser A. STEPHEN died on 5th June, 1917. As a dresser, he did his duty to the satisfaction of the Department. Dresser SAMUEL was transferred to Lumut and succeeded by Dresser YAHAYA during the month of July.

3. *Work done.*—Thirty-one patients remained at the beginning of the year and with 931 admissions makes a total of 962 treated for the year. Average daily number of sick was 41·33 and number of deaths 81 to total treated. Percentage of deaths was 8·70 including 18 deaths which occurred within 48 hours of admission. Thirty-seven patients remained in the hospital at the end of the year.

4. Principal diseases treated were as follows:—

Diseases.			Number of cases.	Number of deaths.	Percentage of mortality.
Ankylostomiasis	...	...	83	14	16·86
Beri-beri	...	...	4	...	...
Chicken-pox	...	...	6	...	...
Diarrhœa	...	...	16	2	12·50
Dysentery	...	...	34	11	32·35
Gonorrhœa	...	...	11	...	...
Malaria	...	...	76	5	6·57
Nephritis	...	...	4	...	...
Phthisis	...	...	11	6	54·54
Pneumonia	...	...	5	1	20·00
Small-pox	...	...	34	7	20·58
Chancroid	...	...	19	...	...
Syphilis	...	...	100	6	6·00

5. Two hundred and sixty-eight specimens of stools were examined during the year. Seventy-six cases of hook-worm ova and 34 cases round-worm ova could be demonstrated. Ol. Cinapodium treatment in a good number of these cases gave more satisfactory results when compared with other treatments. Out of 82 blood films examined for Malaria, 15 malignant and 16 benign malarial parasites could be demonstrated.

6. One hundred and eighty-seven operations were done during the year, 173 cured, 6 recovered and 8 dead.

7. Twenty-one necropsies were performed during the year including 12 dead bodies sent by Police.

8. One hundred and twenty-six cases of Venereal Diseases were treated during the year against 112 in 1916.

9. *Medico-legal.*—Number of bodies sent by Police was 12. Number of police cases treated as in-patients was 40 and as out-patients 105. Number of accident cases not sent by Police and treated in the hospital for the year was 49. Fourteen mental cases were sent by Police for observation. Number of police recruits examined during the year was 52, of which 10 were rejected.

10. Small-pox outbreak was continuous throughout the year in the Northern District and in the latter part only few cases occurred sporadically. One case of Cholera occurred in an estate and proved fatal.

Northern District—total cases of Small-pox were 152 and deaths 43. Total cases of Chicken-pox were 12. No deaths.

BUKIT MERTAJAM HOSPITAL.

1. *Buildings*.—During the year nothing of importance was done except minor repairs and white-washing.

2. *Work*.—The following figures briefly summarise the work done:—

Remaining from 1916	...	...	...	26
Admitted during 1917	...	...	...	717
Total treated	...	...	...	746
Average daily number of sick	...	...	...	32·30
Discharged	...	...	...	570
Transferred	...	...	...	10
Absconded	...	...	...	17
Died	...	...	...	116
Remaining at the end of the year	...	...	...	33
Percentage of deaths to total treated	...	...	...	16·17
Died within 48 hours of admission	...	...	...	20

The number of paying patients was 53, as compared with 95 of previous year and the number of estate coolies was 185 as against 201 of last year.

3. The principal diseases treated were as follows:—

Diseases.				Number of cases.	Number of Deaths.	Percentage of Mortality.
Ankylostomiasis	...	...	...	84	28	33·33
Beri-beri	...	...	...	2	2	100
Diarrhœa	...	...	...	6	3	50
Dysentery	...	...	...	33	15	45
Enteritis	...	...	...	5	5	100
Gonorrhœa	...	...	...	6	...	...
Soft Chancre	...	...	...	5	...	...
Phthisis	...	...	...	24	11	47·50
Malaria	...	...	...	81	16	19·76
Nephritis	...	...	...	13	6	46·15
Pneumonia	...	...	...	11	3	27·27
Syphilis	...	...	...	27	1	3·70
Small-pox	...	...	...	8	1	12·50
Chicken-pox	...	...	...	3	...	...
Measles	...	...	...	1	...	...
Tetanus	...	...	...	1	1	100
Leprosy	...	...	...	7	...	...
New-growth (Malignant)	...	...	...	2	2	100
Wounds	...	...	...	138	2	1·44

4. Blood films of all fever cases were taken of which 70 were found to contain malarial parasites.

Stools of all admissions were examined microscopically. Out of 717 stools 104 contained the ova of hook-worm.

Twenty-two post-mortems were performed on patients dying in the hospital.

5. Surgical operations were as shown in compiled return for Province Wellesley.

6. Twenty-one post-mortem examinations were made excluding those on Coroner's cases.

7. Forty-one cases of Small-pox with 11 deaths and 30 cases of Chicken-pox occurred in Bukit Mertajam District during the year, of the total cases 31 occurred in Kuala Juru with 10 deaths. A fine of \$10 was inflicted by Court for concealment of a Small-pox case.

Nine hundred and fifty-nine children were vaccinated during the year. Two thousand three hundred and sixty-two secondary vaccinations were performed in the district of Bukit Mertajam during the year.

8. *Medico-legal*:—

- (a) The Coroner sent in 11 bodies for post-mortem examination.
- (b) The Police sent in 71 cases for examination and treatment.
- (c) The Magistrate sent three persons for observation of whom two were certified as insane.

9. *Staff*.—Mr. LEICESTER took charge throughout the year. Senior Dresser AROKIASAMY took up duty from January till December 7th, when he was relieved by Senior Dresser CARMAGAM. There were many changes amongst the Junior Dressers.

SUNGEI BAKAP HOSPITAL.

1. *Buildings and grounds*.—These have been throughout in good order, except the drains requiring minor repairs; the three sheds in the Quarantine Camp are in good condition.

2. *Staff*.—Assistant Surgeon Mr. ABRAHAM was in charge up till the middle of September, when he was transferred to Penang. Assistant Surgeon Mr. MITRA from Penang has been in charge from the middle of September. In July Senior Dresser A. KANDIAH from Bukit Mertajam relieved Dresser PETERSON transferred to Penang. Apprentice Dresser MOHAMED SHERIFF was appointed in January, 1917.

3. *Work done*.—There were 30 patients remaining in the beginning of the year; during the year 1,026 patients were admitted, making a total of 1,056 cases treated against 842 of the preceding year: the average daily number of sick during the year was 40.49 as against 40.72 of the preceding year. The percentage of deaths to total treated was 10.22 as against 14.03 of the preceding year. There were 22 deaths within 48 hours of admission; the percentage of deaths comes down to 8.14 after excluding those that died within 48 hours of admission. Forty-four patients remained in hospital at the end of the year.

4. The principal diseases treated with deaths and percentage of mortality from each are as follows:—

Diseases.	Number of cases.	Number of deaths.	Percentage of mortality.
Anæmia	1	...	...
Ankylostomiasis	95	15	15.78
Beri-beri	4	...	...
Cholera ... ..	...	...	...
Diarrhœa & Enteritis	30	3	10
Dysentery	44	17	38.63
Gonorrhœa	11	...	...
Leprosy	13	...	...
Malaria	189	14	7.40
Nephritis	2	...	...
New-growths (Malignant)	5	3	60
Pneumonia	5	...	40
Small-pox	48	18	37.50
Soft Chancre	11	...	...
Syphilis	90	5	5.55
Tuberculosis	28	9	32.14
V. D. H.	2	...	...
Injuries	117	4	3.41

In all fever cases, the blood was examined microscopically, and a large number of stools was also examined for ova. In over 90 per cent of cases the ova of "hook-worm" were present, irrespective of the patients' complaints.

5. Ten necropsies on patients dying in hospital were performed during the year 1917.

6. Ninety surgical operations were performed during the year, *vide* compiled return for Province Wellesley.

7. *Medico-legal*.—The Coroner sent in 25 dead bodies for post-mortem examination. The police sent in 102 cases for examination or treatment, including 10 for observation of insanity and 13 for leprosy. Accident cases not sent by police amounted to 41. Medical evidence was given in the Courts on 53 occasions.

8. *Vaccination, Primary*.—There were 871 primary vaccinations performed during the year, of which 717 were perfect, 65 modified and 89 failed: the percentage of perfect vaccination was 82.31 and that of failures 10.21.

Secondary.—Three thousand three hundred and eight re-vaccinations were performed during the year. Fines to amount of \$5.50 were imposed by Court for refusal of re-vaccination.

9. *Police*.—Thirty-one police constables were admitted during the year. The health of the force has been fairly good throughout the year.

10. *Rainfall*.—The total rainfall during the year was 2,027 millimetres, the mean rainfall was 168.91 millimetres, the greatest rainfall in any one day was 76 millimetres, and the wettest month was March, 1917.

11. *Health*.—Cases of Small-pox continued practically throughout the year under review and towards the last quarter of the year, the disease assumed epidemic proportions at Tassek Junjong and Sungei Acheh. The Tassek Junjong epidemic was due to concealment of the original case and reluctance on the part of the Malays to report early. Several prosecutions took place and in one case only, that of a Malay, the original case at Tassek Junjong, was the maximum penalty inflicted, viz., a fine of \$100.

Wholesale re-vaccinations were done at the following places:—(1) Tassek Junjong, (2) Kampong Tassek, (3) Padang Lalang, (4) Kuala Tassek, (5) Bagan Boyah, (6) Changkat, (7) Sempah estate lines close to Mr. HOLMWOOD'S estate, (8) Sungei Duri Estate, (9) Bakap Estate (Malay lines only), (10) Sungei Bong, (11) Sungei Acheh, (12) Batas Ban (near Sungei Acheh).

One hundred and forty-two cases of Small-pox occurred throughout the year with 55 deaths. Total fines inflicted by Courts for concealment of Small-pox amounted to \$393.50.

Seven cases of Chicken-pox occurred and only one case of Cholera which ended fatally at Krian Estate; there was also one case of Puerperal Septicæmia at the Caledonia Estate Hospital which recovered.

Herewith attached the compiled return of surgical operations performed in Province Wellesley Hospitals during the year 1917.

Dr. MURRAY of Caledonia Estate was in charge till the 5th March, 1917, when I assumed control for the remainder of the year.

Senior Dresser AROKIASAMY of Bukit Mertajam Hospital was boarded out of the service for ill-health towards the end of the year. Senior Dresser STEPHEN of Butterworth Hospital died on 5th June, 1917, after about 17 years' local service.

ANNUAL RETURN OF OPERATIONS FOR THE YEAR 1917 FOR THE PROVINCE WELLESLEY HOSPITALS.

Butterworth Hospital, Bukit Mertajam Hospital, Sungei Bakap Hospital (Summary).

NAME OF OPERATIONS.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Remarks.
<i>On Tumours.</i>													
Excision of new Growth (non-malignant) ...	3	3	...	...	...	...	...	...	3	3	...	...
Enucleation for Cyst ...	1	1	...	...	1	1	...	...	2	2	...	...
<i>On Abscess and Cellulitis.</i>													
Incision for Cellulitis ...	3	3	...	...	...	...	...	...	7	7	...	...
Incision and drainage for abscess ...	18	18	...	...	11	11	...	...	63	63	...	...
<i>On Lymphatics.</i>													
Incision for sup. glands ...	1	1	...	...	...	...	...	...	1	1	...	...
Incision and scraping for sup. bubo ..	6	6	...	...	6	6	...	...	16	16	...	...
Excision for enlarged gland	1	1	...	...	...	...	...	...	1	1	...	...
<i>On Skin and Subcutaneous Tissues.</i>													
Suturing of wounds ...	76	76	...	...	25	25	...	...	101	101	...	...
Carried forward ...	109	109	...	...	43	43	...	...	194	194	...	...

ANNUAL RETURN OF OPERATIONS FOR THE YEAR 1917 FOR THE PROVINCE WELLESLEY HOSPITALS.—Continued.
Butterworth Hospital, Bukit Mertajam Hospital, Sungei Bakap Hospital (Summary)—Continued.

NAME OF OPERATIONS.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Remarks.
<i>Brought forward ...</i>	126	121	5	...	65	62	3	...	59	59	...	...
<i>On Muscles, Tendons and Fasciæ</i>												8	
Tenotomy and breaking of adhesions for ankylosed joint ...	1	1	...	...	...	...	...	...	...	...	...	...
<i>Amputations.</i>													
Amputation leg ...	2	1	...	1	...	...	...	...	...	...	...	1	
Amputation toe ...	1	1	...	...	...	...	...	...	...	...	...	...
Amputation finger ...	6	6	...	...	...	...	...	...	...	...	...	6	
Amputation of arm ...	1	1	...	...	...	...	...	...	...	...	...	1	
<i>On Skull.</i>													
Elevation of depressed bone for fracture skull ...	1	...	1	...	...	...	...	...	1	1	...	...
<i>Brain and Meninges.</i>													
Excision of a portion of Brain for injury ...	1	...	...	1	...	...	...	...	...	...	...	1	
<i>Carried forward ...</i>	139	131	6	2	65	62	3	...	60	60	...	253	
												9	
												2	

ANNUAL RETURN OF OPERATIONS FOR THE YEAR 1917 FOR THE PROVINCE WELLESLEY HOSPITALS.—Continued.
Butterworth Hospital, Bukit Mertajam Hospital, Sungai Bakap Hospital (Summary).—Continued.

NAME OF OPERATIONS.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Remarks.
<i>Brought forward</i> ...	139	131	6	2	65	62	3	...	60	60	...	...	264	253	9	2	
<i>On the Eye.</i>																	
Extraction of lens ...	3	3	...	...	...	...	...	...	...	...	...	...	3	3	...	...
Excision of eyeball ...	...	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...
<i>Dental Operation.</i>																	
Extraction of teeth ...	3	3	...	...	...	...	...	...	3	3	...	...	6	6	...	...
<i>On Thorax.</i>																	
Incision and drainage for Empyema ...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...
Paracentesis Plura ...	...	...	...	...	...	...	...	...	1	1	...	...	1	1	...	...
<i>On Abdomen.</i>																	
Paracentesis abdomini ...	2	1	...	1	4	...	4	...	4	4	...	...	10	5	4	1	
Exploratory Laparotomy for penetrating wound abdomen ...	3	3	...	...	...	...	...	...	2	2	...	...	5	5	...	...
Resection of a portion of intestine and anastomosis for perforation ...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...
<i>Carried forward</i> ...	152	143	6	3	69	62	7	...	71	71	...	...	292	276	13	3	

ANNUAL RETURN OF OPERATIONS FOR THE YEAR 1917 FOR THE PROVINCE WELLESLEY HOSPITALS.—Continued.
Butterworth Hospital, Bukit Mertajam Hospital, Sungei Bakap Hospital (Summary)—Concluded.

NAME OF OPERATIONS.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Total.	Cured.	Relieved.	Died.	Remarks.			
<i>Brought forward</i> ...	164	150	6	8	70	62	7	1	73	72	...	1	307	284	13	10
<i>On Urethra.</i>																
Dilatation of Urethra ...	3	3	...	...	...	...	...	...	1	1	...	...	4	4	...	...
<i>On Male Generative Organs.</i>																
Circumcision ...	9	9	...	...	5	5	...	...	15	15	...	...	29	29	...	...
Removal of scrotum ...	2	2	...	...	...	...	...	...	...	...	...	...	2	2	...	...
Slitting open prepace ...	...	...	...	...	3	3	...	...	...	...	...	...	3	3	...	...
Scraping of chancres ...	...	...	...	...	1	1	...	...	...	...	...	...	1	1	...	...
Radical cure of hydrocle ...	7	7	...	...	...	...	...	...	1	1	...	...	8	8	...	...
Removal of testis ...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...
<i>Obstetric.</i>																
Management of breech pre- sentation ...	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...
TOTAL ...	187	173	6	8	79	71	7	1	90	89	...	1	356	333	13	10

H. W. FURNIVALL,
Medical Officer, Province Wellesley.

APPENDIX D.

MALACCA HOSPITALS.

REPORT BY DR. J. W. ADAMS, M.B., B.C., M.R.C.S., L.R.C.P., *Acting Chief Medical Officer.*

The population is made up as follows:—

Europeans	...	...	...	...	356
Eurasians	...	...	...	...	1,801
Chinese	...	...	...	...	41,498
Malays	...	...	...	...	92,260
Indians	...	...	...	...	8,781
Others	...	...	...	...	502
Total					145,198

Births.—There were 5,862 births in 1917 as against 4,640 in 1916 and 5,078 in 1915.

The following tables show the nationalities:—

			<i>Males.</i>	<i>Females.</i>	<i>Total.</i>
			—	—	—
Europeans	...	...	3	2	5
Eurasians	...	...	39	35	74
Chinese	...	...	585	509	1,094
Malays	...	...	2,233	2,053	4,286
Indians	...	...	129	117	246
Others	...	...	81	76	157
Total					5,862

The birth-rate per mille was 40·37.

Deaths.—There were 7,111 deaths in 1917 as against 5,288 in 1916 and 4,981 in 1915.

			<i>Males.</i>	<i>Females.</i>	<i>Total.</i>
			—	—	—
Europeans	...	...	2	1	3
Eurasians	...	...	24	31	55
Chinese	...	...	1,694	342	2,036
Malays	...	...	2,183	2,074	4,257
Indians	...	...	446	199	645
Others	...	...	86	29	115
Total					7,111

Comparing the death-rate for 1917 with those of 1916, etc.:—

Death-rate	1917	...	...	...	48·97
„	1916	...	...	...	37·38
„	1915	...	...	...	36·14
„	1914	...	...	...	38·56
„	1913	...	...	...	40·78

Of these deaths, 803 occurred in hospitals, 26 were certified by Registered Medical Practitioners, 1,050 were registered after death and 5,232 were not certified.

Vaccinations.—As in previous years vaccinations were pushed vigorously in Malacca with the satisfactory results that we were able to keep Small-pox out of Malacca all but 8 cases.

January	...	...	...	...	1,929
February	...	...	...	...	4,101
March	...	...	...	...	3,077
April	...	...	...	...	3,765
May	...	...	...	...	3,831
June	...	...	...	...	2,621
July	...	...	...	...	2,086
August	...	...	...	...	1,647
September	...	...	...	...	2,137
October	...	...	...	...	1,668
November	...	...	...	...	2,059
December	...	...	...	...	2,408

Number of children and others vaccinated in town and district during the year 1917:—

Nationality.	Town. Number vaccinated.	Total.	Nationality.	Country. Number vaccinated.	Total.	Grand Total.
Europeans	...	17,528	Europeans	2	13,801	31,329
Eurasians	927		Eurasians	94		
Chinese	13,233		Chinese	2,376		
Malays	3,090		Malays	8,721		
Indians	110		Indians	2,285		
Others	168		Others	323		

Municipality.—The estimated population for the Municipality for 1917 is 24,797. There were 676 births and 1,204 deaths within Municipality.

Malaria as in previous years easily accounted for most deaths, viz., 279. Most of these cases contracted their disease outside Municipal Limits in rubber and other estates and returned to their houses or to the hospital for treatment or to die. Convulsion accounted for the second largest number of deaths, viz., 154. The deaths were made up as follows:—

Malarial Fever	...	...	279	as against 242 in 1916.
Convulsions	...	...	154	,, 151 ,,
Fever	...	...	136	,, 86 ,,
Phthisis	...	...	115	,, 82 ,,
Old Age	...	...	78	,, 58 ,,
Tetanus	...	...	43	,, 40 ,,
Marasmus	...	...	41	,, 35 ,,
Beri-beri	...	...	80	,, 32 ,,
Pneumonia	...	...	29	,, 28 ,,
Bronchitis	...	...	41	,, 23 ,,
Dysentery	...	...	24	,, 23 ,,
Enteritis	...	...	19	,, 22 ,,
Premature birth	...	...	8	,, 19 ,,
Still-born	...	...	26	,, 18 ,,
Nephritis	...	...	18	,, 17 ,,
Diarrhoea	...	...	9	,, 12 ,,
Ankylostomiasis	...	...	13	,, 10 ,,
Debility	...	...	4	,, 7 ,,
Child birth	...	...	10	,, 4 ,,
Other causes	...	...	77	,, 58 ,,
			1,204	967

The death-rate per mille was thus 48.55 as against 44.96 in 1916.

DURIAN DAUN HOSPITAL.

Ground and buildings.—Both have been in good order throughout the year. The only works carried out by the Public Works Department were some current repairs to the wards and outhouses and construction of ventilators in the operation theatre.

Staff.—Assistant Surgeon A. H. WHEATLEY was transferred to Singapore in the month of July and was replaced by A. C. DUTTA. Assistant Surgeon K. MUTTUKUMARU acted temporarily when Mr. WHEATLEY fell sick. Assistant Surgeon K. COMARASAMY resigned and his place was taken by Mr. S. T. AIYATHURAI. The latter was sent over to Jasin in the month of October and Mr. K. VEERASINGAM succeeded him.

The Senior Dresser F. NONIS remained in charge unchanged throughout the year. Hospital Assistant F. LAZAROO from Singapore took the place of Dresser MOHAMED GHANI who was removed to the Sanitary Department in the month of February.

Miss E. M. GIFKINS, the matron-in-charge, was working throughout the year together with three nurses, Miss E. GIBBS, Miss D. DYMOND and Miss D. HILL. The latter was transferred to Penang in November and her place was taken by Miss V. A. TOWER.

The new steward, Mr. M. CARVALHO, was taken into the service in the month of September.

The dressers at Jasin Hospital were relieved quarterly as in previous years.

General Wards.

Work done:—

Remained on 31st December, 1916	...	...	98
Admitted during 1917	...	...	1,771
Discharged	...	...	1,468
Transferred	...	...	21
Absconded	...	...	102
Died	...	...	181
Remaining on 31st December, 1917	...	...	97
Average daily number of sick	...	...	89.81
Number of deaths within 48 hours of admission	...	...	37
Percentage of deaths to total treated	...	...	9.68
Percentage of deaths to total treated after excluding those dying within 48 hours	...	...	7.86

The number of Europeans admitted during the year was 98 males and 24 females as compared with 102 males and 36 females in 1916. There was no death. The Quarantine Camp was occupied for a few days during the year. Three cases of Small-pox and six cases of Chicken-pox were received for treatment.

The principal diseases treated were:—

Anæmia	...	...	1 case with	1 death
Ankylostomiasis	...	...	175 cases with	28 deaths
Beri-beri	...	...	56	„ „ 5 „
Blackwater Fever	...	...	3	„ „ no „
Cirrhosis of liver	...	...	2	„ „ 1 death
Diarrhoea	...	...	36	„ „ 4 deaths
Dysentery	...	...	53	„ „ 22 „
Gonorrhœa	...	...	26	„ „ no „
Leprosy	...	...	8	„ „ 1 death
Malaria	...	...	546	„ „ 60 deaths
Nephritis	...	...	10	„ „ 5 „
New-growth (malignant)	...	...	6	„ „ 2 „
Pneumonia	...	...	54	„ „ 16 „
Soft Chancre	...	...	13	„ „ no „
Syphilis	...	...	14	„ „ no „
Tuberculosis	...	...	26	„ „ 9 „
Ulcers	...	...	71	„ „ no „
Wounds	...	...	205	„ „ 3 „

Pauper Wards.

Remained on 31st December, 1916	...	...	178
Admitted during the year	...	...	2,894
Discharged	...	...	2,325
Transferred	...	...	1
Absconded	...	...	85
Died	...	...	522
Remaining on 31st December, 1917	...	...	139
Average daily number of sick	...	...	174.57
Percentage of deaths to total treated was	...	...	16.99
Number of deaths within 48 hours of admission was	...	...	104
Percentage of deaths to total treated excluding those dying within 48 hours of admission was	...	...	14.08

The principal diseases treated were:—

Anæmia	...	...	6 cases with	3 deaths
Ankylostomiasis	...	...	228	„ „ 46 „
Beri-beri	...	...	447	„ „ 83 „
Cirrhosis of liver	...	...	25	„ „ 7 „
Diarrhoea	...	...	21	„ „ 10 „
Dysentery	...	...	106	„ „ 55 „
Gonorrhœa	...	...	62	„ „ no „
Leprosy	...	...	12 cases with	1 death
Malaria	...	...	988 cases with	133 deaths
Nephritis	...	...	32	„ „ 12 „
New growth (malignant)	...	...	9	„ „ 2 „
Pneumonia	...	...	84	„ „ 42 „
Soft Chancre	...	...	28	„ „ no „
Syphilis	...	...	73	„ „ 8 „
Tuberculosis	...	...	87	„ „ 56 „
Ulcers	...	...	227	„ „ no „
Wounds	...	...	52	„ „ 5 „

REPORT ON SURGERY DURING 1917.

There were 380 surgical operations performed during the year under general and local anæsthesia with only 4 deaths. Of these 4 deaths, one with Colotomy died of delayed chloroform poisoning on fifth day after operation. One case of strangulated hernia and another of hepatic abscess were brought in an advanced stage of the illness and both succumbed after the operation. In either case the operation was done with the hope of giving a chance of recovery to the patient. The fourth case was one of a multilocular ovarian cyst having colloidal consistence and adhesions to the surrounding viscera. The tumour was irremovable and the patient died of exhaustion after the operation.

Dr. E. N. GRAHAM remained Surgeon-in-charge.

The list of surgical operations were as follows:—

Surgical Operations.				Number of Cases. Deaths.	
				—	—
<i>On Tumours:—</i>					
Excision of new growth (malignant)	...	...	...	1	—
„ „ „ (non-malignant)	...	...	...	1	—
<i>For Abscess and Cellulitis:—</i>					
Incision for Abscess	...	...	...	44	—
„ Cellulitis	...	...	...	5	—
<i>Foreign Body:—</i>					
Removal of foreign bodies	...	...	...	7	—
<i>On Artery:—</i>					
Ligature of Artery for injury	...	...	...	1	—
<i>On Veins:—</i>					
Intra venous injection of Novo-arseno benzol	...	...	...	7	—
<i>On Lymphatics:—</i>					
Excision of enlarged glands	...	...	...	4	—
Incision and drainage for suppurative bubo	...	...	...	28	—
<i>On Skin and sub cut: tissue:—</i>					
Incisions for Carbuncle	...	...	...	3	—
Suturing of Wounds	...	...	...	157	—
Curetting of Ulcers	...	...	...	40	—
<i>On Bones:—</i>					
Removal of Sequestra	...	...	...	3	—
<i>On Joints:—</i>					
Aspiration of joint	...	...	...	2	—
Incisions with drainage of septic joint	...	...	...	1	—
<i>On Tendon:—</i>					
Union of tendon	...	...	...	1	—
<i>Amputation:—</i>					
Amputation of fingers	...	...	...	2	—
<i>On Spine:—</i>					
Lumbar puncture	...	...	...	1	—
<i>On Eye:—</i>					
For Entropion	...	...	...	1	—
<i>Carried forward</i>				309	—

			<i>Number of Cases.</i>	<i>Deaths.</i>
	<i>Brought forward</i>	...	309	—
<i>On Mouth:—</i>				
Removal of Tonsils	...	...	1	—
<i>Dental Operation:—</i>				
Extraction of teeth	...	...	8	—
<i>On Ear and Accessory Cavities:—</i>				
Operation for Mastoid Abscess	...	...	3	—
<i>On Thorax:—</i>				
Paracentesis Pleura	...	...	3	—
Incision and drainage of Pleura	...	...	1	—
<i>On Abdomen:—</i>				
Paracentesis Abdominis	...	...	16	—
Celotomy for malignant growth, rectum	...	...	1	1
Operation for strangulated hernia	...	...	1	1
Radical cure for inguinal hernia	...	...	3	—
Operation for hepatic abscess	...	...	1	1
<i>On Rectum and Anus:—</i>				
For Fistula in Ano	...	...	3	—
<i>On Urethra:—</i>				
Dilatation of stricture	...	...	2	—
Operation for extravasation of urine	...	...	1	—
„ urethral fistula	...	...	1	—
Removal of Calculus from urethra	...	...	1	—
<i>On Male generative organs:—</i>				
Circumcision	...	...	18	—
Radical cure for Hydrocele	...	...	3	—
<i>On Female generative organs:—</i>				
Ovariectomy	...	...	1	1
<i>On Obstetrics:—</i>				
Division of Vulvar Orifice for Atusia	...	...	1	—
Evacuation of uterus for retention of membranes	...	...	1	—
Plugging of utero-vaginal canal for hæmorrhage	...	...	1	—
			<u>380</u>	<u>4</u>

Twenty-four necropsies were held on the bodies of patients dying in the hospital.

Medico-legal.—(a) The Coroner sent in 50 bodies for post-mortem examination.

(b) The Police brought in 174 cases for examination or treatment.

(c) Fifty persons were brought in by the Police for observation for insanity and 8 for examination for leprosy.

Health of the Police.—Two hundred and forty-nine patients were admitted during the year with only one death from Malaria. The majority of the patients sought admission for Malaria.

JASIN HOSPITAL.

At the end of 1916 there were 37 cases under treatment.

Total number of admissions for the year was 1,203 against 912 in 1916, an increase of 291 cases. Estates sent in 470 cases against 332 in 1916. Police admitted—17 cases against 24 in 1916. The remainder were paupers—an increase of 156 cases when compared with 1916.

There were 99 deaths out of which 24 died within 48 hours.

The chief diseases treated were:—

Malaria (malignant)	...	159	with 10 deaths (5 within 48 hours).
„ benign	...	115	
„ chronic	...	117	
Pneumonia	...	53	„ 14 „ (3 „ 48 „)
Dysentery	...	73	„ 16 „ (1 „ „ „)
Beri-beri	...	50	„ 4 „ (2 „ „ „)
Ankylostomiasis	...	93	„ 7
Phthisis	...	63	„ 17 „ (4 „ „ „)
Nephritis, chronic	...	44	„ 7 „ (2 „ „ „)
Scabies	...	32	

Others that died within 48 hours were:—Gastritis 1, Septicæmia 2, Meningitis 2, Peritonitis 1, Effects of cold 1.

The above figures compared with those of 1916 show an increase of 79 malarial admissions and a decrease of 4 deaths.

Total number of vaccinations and revaccinations was 3,978.

Majority of them was not available for inspection.

Hospital Building.—Two wards, I and II.

To ward one is attached a small ward for female patients with eight beds. Total number of beds available in the hospital is 72.

Staff.—One Assistant, two Dressers, five male hospital attendants, one female attendant.

The Principal Civil Medical Officer paid one visit to this hospital and the Chief Medical Officer paid 18 visits. There were no complaints made.

PRISON HOSPITAL.

Dr. KEUN was in charge up to the 31st July when he resigned his appointment and was temporarily succeeded by Dr. DODDS being relieved by Dr. HARRISON on the 1st September. Dresser PETER DIAS worked throughout the year.

On the 1st January there were no cases under treatment. There were 26 admissions for the whole year with one death from Ankylostomiasis.

The chief diseases treated were:—Diarrhœa 9, Dysentery 7 Malarial Fever 2, and Hernia (reducible) 2.

MEDICAL MISSION.

Miss CUMBER has kindly furnished the following details:—

In-patients	...	...	...	140
Total attendances	...	...	...	4,009
Malay attendances	...	...	...	766
New cases, out-patients	...	...	...	1,779
Attendances for Ophthalmic Diseases	...	...	...	131
Attendances for Gynaecological Diseases	...	...	...	324
Attendances for Malaria and complications	...	...	...	99
Dental Extractions	...	...	...	31
Operations under Chloroform or spinal anæsthesia	...	...	...	20
Other minor operations	...	...	...	30
Vaccinations	...	...	...	36
Maternity cases	...	...	...	63
Visits to Alai Dispensary	...	...	...	48
Surgical dressings	...	...	...	883
Death certificates	...	...	...	33

Of the 63 maternity cases 18 were abnormal and in spite of delay by reason of distance or hesitation on the part of the patient's relations to send for the doctor only two of these ended fatally for the mother.

The number of normal cases is rapidly increasing and quite a number of women are now willing to come into hospital to have their babies.

During the year two of our pupils have obtained a Government certificate for midwifery. Another two are now ready and will shortly be going to Singapore for the examination. A pupil who passed the examination in 1916 is leaving us this month to work under Dr. WATSON of Klang. She is to work among her own people (Tamil). Owing to early Phthisis Dr. WARREN was obliged to leave the country in December so much of the work has had to cease. Dr. WATSON has kindly promised to visit hospital in place of Dr. W. G. ELLIS.

REPORT OF ACTING HEALTH OFFICER.

Mr. D. C. RICHARD acted as Health Officer.

During the year a health laboratory was newly created and samples of water and milk were analysed at regular intervals.

Milk.—One hundred and forty-five samples of milk were analysed, of which 142 were fresh cow's milk, 2 skimmed milk and 1 condensed tin milk. Fifty-three samples of fresh milk were found adulterated by the addition of water. In 10 of these the percentage of added water worked out to be less than 5 per cent and as advised by the Government Analyst, Straits Settlements, no prosecution was recommended for these cases. In the remaining 43 the percentage of added water varied from 6 per cent to 57 per cent. Prosecution was recommended and conviction was obtained in the case of each of these.

Water.—Thirty-three samples were analysed and of these 4 (taken from H. BACHEE's Estate at Alor Gajah, Klemak Estate, Jasin Estate, and Durian Tunggal Police Station) were found unfit for domestic uses and were therefore condemned. The Ayer Kroh Reservoir water was analysed five times during 1917 and was found in good condition at each examination. Water from the three wells at Bukit China (from which a good many houses in the town get their drinking water) was analysed thrice and was found in excellent condition at each examination.

Ankylostomiasis Work.

This work consisted solely of making house-to-house visits in Malay kampongs and advising people on the use of latrines as a means of preventing the spread of Ankylostomiasis among them. No compulsion of any kind was used. Pit attap latrines 4 feet 4 feet 4 feet were recommended as suitable for most places. In the case of low-lying kampongs the depth of the latrines had to be decreased—in some cases to even two feet. To keep the latrines in sanitary condition the daily application of dry earth was recommended. During the year all the kampongs in the Central and Jasin Districts have been visited and revisited. The kampong people invariably took their time to make the latrines and thereby necessitated several visits to the same places for purposes of inspection. Generally speaking it may be said that latrines are now in use in all the kampongs in the district visited but the old practice of defaecating in the sawah and compounds has not been altogether given up. There are people who even after taking the trouble to make latrines go about defaecating promiscuously as before. The smell which is inseparable from the pit latrines is an objection to their regular use. There are at present about 2,550 latrines in the kampongs, each of the latrines is being used by two or more houses.

Estates visited.

Eighty-six estates have been visited, the object being to see that the provisions of the Estate Labourers (Protection of Health) Ordinance, 1911, as regards house accommodation, water supply and latrine accommodation were complied with. In the case of each of the estates visited written instructions had to be given asking for compliance. Twenty-nine of these estates have been revisited—some of them as many as five times. In all 136 visits were paid to the estates. The names of the estates visited are all given in my monthly reports for 1917. Action was taken in court against only two estates—Kelemak Estate and Raman Chitty's Estate at Gadek. The Manager of the former was charged with not having enough house accommodation, proper water supply and proper latrine accommodation and was convicted and fined \$60. The action against the Chitty Estate was for not sending a cooly to hospital at the proper time.

Malarial Survey.

A mosquito survey of Malacca Town was carried out in January. As was expected stream-breeders like *A. Maculatus* and *A. Aconitus* were not found within the town limits as there were no streams suitable for the breeding of these species. The only proved carrier of Malaria in nature found within town limits was *A. Umbrosus* which was present in small numbers in the sawah between Lorong Panjang and Banda Hill Roads and also in a pond at Gajah Berang. The latter spot was stocked with fish by the owner. The former is an extensive area which can be dealt with by drainage only. A malarial survey of the surroundings of four suggested sites for the Jasin and Alor Gajah Hospitals was made. A survey was also made of the sites of proposed new coolie lines at Kelemak, Tebong, Batu Berkarat Estates. The streams and sawahs at Tangga Batu were examined. In the latter which contained many seepage outcrops *A. Karwari* were found in large numbers. In the streams *A. Maculatus* besides *A. Karwari* were present. The Lumut streams at the Dindings were examined in August. The only carrier of Malaria in nature found there was *A. Maculatus* which was present in great numbers in nearly all the streams there.

Splenic Index.

The splenic indices of a good many vernacular schools were taken. They varied within very wide limits. Places without hills and streams had very low splenic index. Hilly districts where streams were invariably present had very high indices.

Medical Department.

Dr. KEUN was in charge up to 31st July, 1917, when he resigned his appointment and was succeeded by Dr. DODDS, who was relieved by Dr. HARRISON on the 1st September, 1917.

The Chief Clerk, Mr. CHUA LIP KEE, resigned his appointment on the 30th August, 1917, and was succeeded by Mr. V. E. DIAS.

Health Department.

Mr. D. C. RICHARD was in charge of the Health Department under the direction and supervision of the Chief Medical Officer from January till the 27th December, when Dr. MARTIN was sent from Singapore to take charge.

Report on Estate Hospitals.

(1) Estates belonging to Malacca Rubber Plantations, Ltd.

In connection with this group of estates there are six hospitals. During the year 1,683 cases were treated in these hospitals with 97 deaths giving a percentage mortality of 5.76. The labour force was 4,556. Of the 97 deaths, 30 were due to Malaria and 20 to Dysentery. During the year 410 coolies were sent to town hospitals and of these 48 died.

(2) Diamond Jubilee Estate.

There is one hospital. During the year 797 patients were admitted to the hospital with 29 deaths giving a percentage mortality of 3.63. The labour force was 977. Of the 29 deaths, 5 were due to Malaria. During the year six coolies were sent to town hospitals with no deaths.

(3) Lendu Rubber Estate.

There is one hospital. Two hundred and forty-five patients were admitted during the year and of these 4 died giving a mortality of 1.22 per centum. The labour force was 300. Fourteen coolies were sent to town hospitals during the year and of these six died.

(4) Tebong Rubber and Tapioca Estate.

There is one hospital here. During the year 484 patients were admitted to the hospital with 10 deaths giving a percentage mortality of 2.06. Of these 10 deaths, Malaria accounted for 7. During the year, 22 coolies were sent to town hospitals and of these 1 died. The labour force was 959.

The chief diseases treated were:—

Malaria	...	...	...	224 cases with 7 deaths.
Ankylostomiasis	...	...	51	.. .. no ..
Fever unspecified	...	...	34	.. .. no ..
Ulcers	...	...	30	.. .. no ..

The patients treated in hospital were made up of the following nationalities:—

Tamils	...	...	...	446
Chinese	...	...	...	37
Singhalese	...	...	...	1
Total				484

(5) Devon Estates—

In connection with this group there are three sick lines comprising 34 beds. The average labour force was 840 and the total admissions to sick lines 522. Among these 11 deaths occurred giving a mortality of 2.10 per centum. Of these 11 deaths, Malaria accounted for 8. During the year 22 coolies were sent to town hospitals and of these 10 died.

(6) Merlimau Rubber Estates—

There are two hospitals serving this group and during the year 1,031 cases were admitted to them. Among these 6 deaths occurred. The average labour force was 1,291. During the year 97 coolies were sent to town hospitals of whom 18 died.

The chief diseases treated were:—

Malaria	...	...	...	686 cases with 1 death.
Diarrhoea	...	...	68	.. .. 2 deaths.
Ankylostomiasis	...	...	48	.. .. no ..
Bronchitis	...	...	35	.. .. no ..
Debility	...	...	30	.. .. no ..

APPENDIX E.

OUT-DOOR DISPENSARIES.

SINGAPORE.

(North Canal Road.)

REPORT BY MR. E. E. AVIET, *Assistant Surgeon in charge.*

1. The number of patients treated during the whole year was 6,155 as against 6,564 in 1916.

The number of visits paid was 21,231 as against 24,496 in 1916.

The average daily attendance was 71.27 as against 82.48 in the previous year.

Of the 6,155 patients treated 5,114 were paying patients, 448 were patients suffering from Venereal Diseases, 297 were Government servants and 296 were indigent patients.

2. The fees collected for the whole year amounted to \$1,626.30 as against \$1,827.90 in 1916.

3. The nationalities of those treated were as follows:—

				Males.	Females.
Europeans	...	...	...	9	2
Eurasians	...	...	...	167	199
Chinese	...	...	...	2,954	902
Indians	...	...	...	1,139	201
Malays	...	...	...	251	188
Others	...	...	...	97	46
Total				4,617	1,538

4. The principal diseases treated were as follows:—

Malaria	...	...	...	...	602
Venereal Diseases	...	...	...	...	448
Ulcers and Injuries	...	...	...	...	1,291
Bronchitis	...	...	...	...	331
Fever unspecified	...	...	...	...	369
Parasitic Skin Diseases	...	...	...	...	334

5. *Malaria*.—Six hundred and two cases of Malaria were treated during the year as against 676 in 1916. Of these 200 or 30 per cent gave a history of having been infected outside Singapore and these came mainly from Johore, Muar, Rhio, Kelantan and the Federated Malay States. The remaining 402 came chiefly from Bukit Timah, Bukit Panjang, Tanjong Pagar, Sepoy Lines and Serangoon District.

Blood films and sputa were examined in doubtful cases only.

6. *Venereal Diseases*.—These cases were given free treatment. Of those treated there were:—

				Males.	Females.
Syphilis, Primary	...	...	...	118	5
„ Secondary	...	...	...	138	12
„ Tertiary	...	...	...	14	—
Gonorrhœa	...	...	...	96	—
Chancre	...	...	...	65	—
Total				431	17

7. Nine hundred and ninety-two children under ten years were treated during the year. They suffered mainly from Bronchitis, Enteritis, Round Worms, Dyspepsia and Skin Diseases.

8. Mr. P. C. FERNANDEZ was in charge up to about the end of November when I relieved him.

Jalan Klapa Out-Door Dispensary.

REPORT BY MR. GOH TONG SIN, *Assistant Surgeon in charge.*

1. Mr. E. E. AVIET was in charge of the dispensary until November 29th when I relieved him.

2. The total number of patients treated during the year was 3,491, and the number of visits paid was 8,797, giving a daily average attendance of 43'31.

3. Of the 3,491 patients treated, 3,037 were paying patients, 20 were Government servants and 454 indigent patients.

4. The fees collected for the whole year amounted to \$952.25.

5. The nationalities of those treated were:—

				Males.	Females.
				—	—
Europeans	...	...	...	5	—
Eurasians	...	...	...	91	82
Chinese	...	...	...	1,390	213
Malays	...	...	...	668	429
Natives of India	...	...	...	436	93
Others	...	...	...	82	2
Total				2,672	819

6. The principal diseases treated were:—

Malaria	...	...	...	...	476
Venereal Diseases	...	...	...	...	229
Minor Injuries	...	...	...	...	560
Bronchitis	...	...	...	...	333
Fever (unspecified)	...	...	...	...	131
Skin Diseases	...	...	...	...	197

7. *Malaria*.—Of the 476 cases of Malaria, 258 were infected in Singapore, 157 came from Johore, 29 from various places in the Federated Malay States, 26 from the Dutch Islands and the rest came from various other places.

Those infected in Singapore were mostly inhabitants of Bukit Timah, Chua Chu Kang, Serangoon, Kallang and Geylang.

8. *Venereal Diseases*.—One hundred and sixty-nine cases of Syphilis were treated, of which:—

46 were Primary.
91 „ Secondary.
30 „ Tertiary.

Sixty-two cases of Gonorrhœa came for treatment.

9. The number of children (2 years old and under) treated was 175, and of these 75 suffered from Lung Diseases (mostly Bronchitis), 43 cases of Intestinal Complaints and the rest from Pyrexia (Dentition), Round Worms, Scabies, etc.

PENANG.

Chowrastra Dispensary.

1. The patients treated during the year numbered 6,107 as against 6,101 in 1916.

2. The dispensary was open for 310 days during the year, the daily average number of visits being 50.05, about the same average as in 1916. The total receipts for the year amounted to \$750.50, a decrease of \$47.75 to that for 1916.

3. This institution continues to be well appreciated by the poor class of people.

4. The principal diseases treated as compared with that of the preceding year were as follows:—

	1916.	1917.
	—	—
Malaria	388	371
Pyrexia	631	694
Rheumatism	561	511
Venereal Diseases	358	299
Bronchitis	275	332
Diarrhoea	53	89
Dyspepsia	220	213
Ulcers	1,213	1,186
Injuries	493	501

5. The nationalities of those treated are as follows:—

	1916	1917
	—	—
Europeans	11	1
Eurasians	222	232
Chinese	2,569	2,352
Malays	902	1,019
Natives of India	2,325	2,413
Others	72	90

6. Assistant Surgeon J. H. L. WESTERHOUT and Hospital Assistant G. DEVADASON did duty throughout the year.

Out-Door Dispensary, Lumut.

The total number of cases was 552 as against 631. The daily average visits for the year was 2.57 as against 3.22; of the 552 cases 218 were for Malaria and 80 for Pyrexia.

Of these:—

502 came from Dindings
15 came from Pangkor
35 came from Sitiawan

—
552 ... Total.
—

The receipts for the year were \$57.80.

Out-Door Dispensary, Balik Pulau.

	1916	1917
	—	—
Number of patients	903	866
Number of visits	1,681	1,739
Number of indigent patients	44	148
Number of Government servants	271	160
Number of paying patients	588	558
Number of males	691	593
Number of females	212	273
Average number of visits per diem	4.15	4.68
Receipts for the year	\$143.61	\$124.15

				1917	1916
<i>Nationality.</i>		<i>Males.</i>	<i>Females.</i>	<i>Total.</i>	
Europeans	...	13	1	14	6
Eurasians	...	11	1	12	8
Chinese	...	337	234	571	651
Malays	...	106	20	126	152
Indians	...	126	17	143	86
Total		593	273	866	903

Out-Door Dispensary, Butterworth.

One thousand six hundred and eighty-three patients were treated during the year as compared with 1,312 in the preceding year. The collection amounted to \$225.60 as compared with \$153.12 in 1916.

The principal diseases treated were as follows:—

Anæmia	...	...	...	...	17
Asthma	...	...	...	...	25
Bronchitis	...	...	...	...	183
Conjunctivitis	...	...	...	...	21
Constipation	...	...	...	...	79
Diarrhoea	...	...	...	...	35
Dysentery	...	...	...	...	39
Gonorrhœa	...	...	...	...	23
Helmenthiasis	...	...	...	...	29
Malaria	...	...	...	...	356
Syphilis	...	...	...	...	28
Skin Diseases	...	...	...	...	51
Abscess	...	...	...	...	32
Bubo	...	...	...	...	159
Wounds	...	...	...	...	178

The nationalities of the out-patients treated were:—

		<i>Males.</i>	<i>Females.</i>
Europeans	...	89	55
Eurasians	...	83	26
Chinese	...	307	81
Malays	...	249	24
Indians	...	637	121
Others	...	10	1

Out-Door Dispensary, Bukit Mertajam.

The number of out-patients treated during the year was 1,145 and the receipts amounted to \$175.35 as compared with 1,884 patients and \$283.30 in 1916.

The nationalities of the patients were as follows:—

		<i>Males.</i>	<i>Females.</i>
Europeans	...	14	2
Eurasians	...	57	8
Chinese	...	453	193
Malays	...	76	6
Natives of India	...	251	39
Others	...	40	6
Total		891	254

The principal diseases treated were as follows:—

Malaria	...	...	...	...	70
Dysentery	...	...	...	..	13
Gonorrhœa	...	...	...	...	5
Pyrexia	...	...	...	...	237
Rheumatism	...	...	...	...	15
Syphilis	...	...	...	...	49
Anæmia	...	...	...	...	7
Conjunctivitis	...	...	...	...	12
Bronchitis	...	...	...	..	85
Phthisis	...	...	...	...	6
Dyspepsia	...	...	...	...	52
Diarrhœa	...	...	...	...	35
Intestinal Colic	...	...	...	...	21
Bubo	...	...	...	...	2
Soft Chancres	...	...	...	...	13
Wounds	...	...	...	...	207
Round-Worms	...	...	...	...	33
Ankylostomiasis	...	...	...	...	4

Out-Door Dispensary, Sungei Bakap.

Total treated.—Nine hundred and seventy-three patients were treated throughout the year, against 1,270 patients in the previous year.

Collection.—The collection amounted to \$182.05 as against \$207 of the previous year.

Nationalities.—The nationalities of those treated were:—

	<i>Males. Females.</i>	
	—	—
Europeans	22	—
Eurasians	10	1
Chinese	424	102
Malays	72	10
Natives of India	246	72
Others	14	—
Total	788	185

Principal Diseases.—The principal diseases treated were as follows:—

<i>Diseases.</i>	<i>Number of Cases.</i>
—	—
Anæmia	10
Diarrhœa	29
Dysentery	1
Gonorrhœa	11
Helminthiasis	38
Malaria	214
Nephritis	3
New Growths (non-malignant)	1
Syphilis	16
Tuberculosis	3
Valvular Disease of Heart	2
Wounds and Injuries	143
Ulcers	73

Out-Door Dispensary, Nibong Tebal.

Building.—The witness-room of the court-house at Nibong Tebal was occupied throughout the year from 8 A.M. to 10 A.M.—the dispensing hours—and visits were paid thrice a week, viz., on Tuesdays, Thursdays and Saturdays.

Staff.—The Assistant Surgeon, Sungei Bakap, and the junior dresser from the Sungei Bakap Hospital attended the dispensary at the usual hours.

Work done.—The dispensary was opened 155 days during the year; 389 patients attended the dispensary as compared with 609 in the previous year. Of these 181 were Government servants, 186 paying and 22 indigent patients. The daily average number of visits was 4.65 as compared with 7.78 in 1916. The collection amounted to \$42.48 as compared with \$70.55 in the previous year: the drugs and dressings were supplied from the Sungei Bakap Hospital.

Nationality.—The nationalities of those treated were as follows:—

				Males.	Females.
				—	—
Europeans	...	...	...	—	—
Eurasians	...	...	...	1	—
Chinese	...	...	...	141	27
Malays	...	...	...	63	—
Natives of India	...	...	...	130	26
Others	...	...	...	—	—
				—	—
			Total	335	54
				—	—

The principal diseases treated were as follows:—

Diseases.					Number of Cases.
—					—
Anæmia	...	...	...	...	1
Diarrhœa	...	...	...	...	3
Dysentery	...	...	...	...	2
Gonorrhœa	...	...	...	...	6
Helminthiasis	...	...	...	...	6
Malaria	...	...	...	...	59
New Growths	...	...	...	...	2
Pneumonia	...	...	...	...	1
Syphilis	...	...	...	...	10
Wounds	...	...	...	...	56
Yaws	...	...	...	...	1
Ulcers	...	...	...	...	48

Malacca Out-Door Dispensary.

This was under the charge of Mr. R. M. NUNIS throughout the year. Three thousand four hundred and sixty-five cases were treated in the Dispensary as contrasted with 3,091 in 1916.

The total receipts for the year were \$428.56 as against \$358.94 in 1916.

The nationalities of those treated were as follows:—

Nationalities.					Males.	Females.
—					—	—
Europeans	...	...	...	...	40	149
Eurasians	...	...	...	...	643	686
Chinese	...	...	...	...	425	266
Malays	...	...	...	...	667	87
Indians	...	...	...	...	419	74
Others	...	...	...	...	6	3
					—	—
			Total	...	2,200	1,265
					—	—

The chief diseases treated were :—

Pyrexia ...	...	...	...	573
Bronchial Catarrh ...	...	...	...	430
Dyspepsia ...	...	...	...	187
Bronchitis ...	...	...	...	152
Constipation ...	...	...	...	130
Beri-beri ...	...	...	...	126
Rheumatism ...	...	...	...	121
Anæmia ...	...	...	...	117
Diarrhœa ...	...	...	...	117
Ulcer ...	...	...	...	106
Neuritis ...	...	...	...	96
Ascaries Lumbricoides ...	...	...	...	89
Debility ...	...	...	...	84
Malaria ...	...	...	...	69
Scabies ...	...	...	...	63
Asthma ...	...	...	...	57
Conjunctivitis ...	...	...	...	53
Colic, intestinal ...	...	...	...	37
Eczema ...	...	...	...	37
Phthisis ...	...	...	...	36
Tonsillitis ...	...	...	...	34
Tinea ...	...	...	...	34
Cellulitis ...	...	...	...	34
Nephritis ...	...	...	...	33
Wound ...	...	...	...	32
Cystitis ...	...	...	...	31
Myalgia ...	...	...	...	30
Valvular Disease of Heart ...	...	...	...	26
Gastritis ...	...	...	...	24
Boil ...	...	...	...	24
Earache ...	...	...	...	23
Pharyngitis ...	...	...	...	23
Neuralgia, facial ...	...	...	...	19
Syphilis ...	...	...	...	19
Mumps ...	...	...	...	16
Dysentery ...	...	...	...	16
Flatulency ...	...	...	...	13
Stomatitis ...	...	...	...	12
Inf. nose ...	...	...	...	12
Hæmorrhoids ...	...	...	...	11
Threatened abortion ...	...	...	...	11
Contusion ...	...	...	...	11
Sprain ...	...	...	...	10

Alor Gajah Dispensary.

DRESSEI TAMBY KECHIL was in charge for the whole year. The temporary small-pox shed built in 1915 is still in use. During the year three cases of small-pox were admitted from Padang Sebang on 17th November, 1917, and there was no death.

During the year 404 cases received treatment in the out-patient dispensary—Males 359 and Females 45.

The total receipts amounted to \$29.20.

The chief diseases treated were :—

Malarial Fever ...	...	...	...	140
Ulcer ...	...	...	...	67
Constipation ...	...	...	...	47
Rheumatism ...	...	...	...	32
Anæmia ...	...	...	...	20
Scabies ...	...	...	...	15
Bronchitis ...	...	...	...	14
Wound ...	...	...	...	11

APPENDIX A.

QUARANTINE.

SINGAPORE.

REPORT BY DR. G. E. BROOKE, M.A., L.R.C.P., D.P.H., *Chief Health Officer.*

Staff.

Chief Health Officer	...	G. E. BROOKE, M.A. (Cantab.), L.R.C.P. (Edin.), D.P.H.
Assistant Port Health Officer	...	*W. W. MARTIN, M.B., Ch.B. (Manch.), D.P.H.
2nd Assistant Health Officer	...	† Vacant.
Assistant Rural Health Officer	...	‡A. G. H. SMART, M.B., Ch.B. (Edin.), D.T.M. & H.
Resident Medical Officer, St. John's Island Quarantine Sta- tion	... ..	{ § Vacant. P. C. FERNANDEZ, L.M.S. (<i>acting</i>).

1. *General*.—Immigration was unrestricted during this year, but the total number of coolies arriving fell much below the usual figure chiefly owing to the redistribution of shipping under war conditions. There was again no pilgrim season.

2. *Staff*.—War conditions considerably affected the staff as will be seen from the list above. This Department sustained a severe loss by the death of the Principal Civil Medical Officer, Dr. ELLIS, on October 8th. His interest in, and care for, the various activities of health work were a marked feature of his seven years' administration.

3. *Office*.—Owing to the occurrence of a few sporadic cases of Plague in Singapore and the consequent imposition of quarantine restrictions against us, by the Dutch, the issue of Bills of Health and Disinfection Certificates increased considerably. The former totalled 1,915, and the latter 383—representing a revenue of over \$11,000. Our present type of Bill of Health which was introduced in 1916 has proved very satisfactory to neighbouring ports as far as can be ascertained. It gives, in a concise form, just the information a Health Officer wants on boarding a ship. Amoy and Swatow have adopted a similar document; and it is to be regretted that some such type is not universally adopted throughout the British Empire.

Seventy-four permits exempting from quarantine at Penang were issued to ships under section 50 of the Quarantine and Prevention of Disease Ordinance 1915.

Passengers' undertakings to report to the Municipal Health Officer were furnished in 160 cases, as also 8 bonds for the due performance of the same.

Sixty-nine (69) subordinates of the Marine Department Staff were treated as out-patients at the Port Health Office with 93 attendances. In addition, 10 were physically examined for Government and Naval service.

Two prosecutions were instituted, one being a shipping case in which some passengers on a small-pox ship were secreted in the hold; a conviction was secured and the comprador fined \$600. The other was a rural case of failure to report small-pox, when a fine of \$50 or 3 months was imposed.

4. Six hundred and ninety-four visits were paid to ships, during which we examined 51,161 crew and 226,281 passengers—making a total of 5,749,895 examinations since I took charge of the Department in 1902.

* Dr. MARTIN transferred to Malacca at end of the year. W. D'CRUZ (L.M.S.) acting.

† F. W. F. CLARKE (Assistant Surgeon, Madras) acting from end of year.

‡ Absent at the front.

§ V. H. NORRIS acting to 27th November, 1917.

Twenty-seven bodies on ships and 18 on sampans were inspected during the year, and permits issued for burial ashore in each case. Twenty infected ships arrived, Small-pox accounting for 16 (Hongkong 10, Madras 6); Cholera for 2 (Madras 1, Batavia 1); and Plague for 2 (Amoy 1, and Madras 1).

Either the *Crow* or the *Hygeia* was used for the disinfection or fumigation of 404 ships; and also used for changing guard or removing stores on 15 occasions.

Fifty water-boats were examined including five new ones. No inspection of Hammer & Co.'s water reservoirs was made during the year.

I should like once more to call attention to the great need for provision by the Government of specially constructed covered "flats" for landing and discharging passengers at and from St. John's. The transport provided by the Agents consists merely of deep cargo lighters in which the passengers are huddled like sheep. It is very hard for women and children to climb down into them; they are hot and airless; and they have no protection from sun or rain.

5. A Port Health Officer in the East suffers from the want of a proper intelligence department.

The International Office of Public Health in Paris might be in the moon as far as he is concerned, for their reports are incomplete, are not classified into weekly periods, are months in arrears when received, and are only issued in French.

For us, the world is an oblong figure lying between longitudes 30° E. and 150° E., and between 30° N. and 30° S. latitudes. At the four corners of this figure are the ports of Port Said, Durban, Sydney and Kobe. These are, generally speaking, the gates of access to us from the outside world. Within the above Eastern area all the ports of commerce are of vital significance to us. There are about 26 major ports and 26 secondary ports.

We need an Eastern Public Health Bureau in some central place such as Singapore. This Bureau would receive and disseminate telegraphic and written reports of infectious disease; would keep Health Officers posted in current sanitary legislation; and would arrange for periodical health conferences for the exchange of ideas.

Infectious disease was more prevalent in Eastern ports during 1917 than during the previous year.

The small-pox epidemic at *Hongkong* was still high at the beginning of the year, and gradually dwindled until it finally disappeared in the middle of April. In all, nine ships from that port were infected with Small-pox on arrival here. The vaccinations of Hongkong emigrants to the Straits Settlements proved to be very unsatisfactory. They are done by various medical firms, private practitioners, public vaccinators, etc.,—out of 10 sources, only two had a successful percentage of more than 60 per cent with good marks. The certificates issued by nearly all the sources were quite valueless to the holder for they did not say who had performed the vaccination, nor even gave the name or identification of the person vaccinated. It was so unsatisfactory that we continued through the year to land all deck passengers from that port for disinfection and re-vaccination and we found that over 20 per cent had not been recently vaccinated at all, and of the remainder nearly 12 per cent were failures.

The soundest modern ideas with regard to quarantine are: that measures should be taken at the port of departure rather than at the port of arrival. I would bring up again, for consideration, my previous suggestion that we should have a coolie depôt at the ports of Amoy, Swatow, and Hongkong where coolies can be cleaned up, inspected, vaccinated, and detained in clean surroundings until their ship is ready for them.

Saigon had a limited small-pox epidemic in the spring lasting for four or five months, and also a short explosive cholera outbreak in May. *Java* ports always need watchful attention owing to their close proximity to us. *Batavia* had no plague during the year, but cholera occurred at intervals with a small epidemic in September. Both *Sourabaia* and *Samarang* had sporadic cases of plague fairly continuously. Plague was originally introduced with rice cargoes to *Sourabaia*, and it is interesting to see the way in which the spread has followed the railways, tending to show that railway quarantine at the source might have saved the spread of the disease by train-borne rats; for town rats do not travel across country to any extent by themselves.

Westward ports had a better record than usual except *Karachi* and *Bombay* which had the usual spring epidemic of plague reaching its maximum in April and May. *Colombo* had sporadic cases of plague all through the year. *Madras* town escaped; and *Calcutta* had a most unusual chart showing the merest trace of its normal spring plague epidemic. A short cholera epidemic occurred there in April and May.

6. *Rural Areas*.—Rural work of a routine nature was largely curtailed owing to lack of staff. Cases of *Cholera* were removed and disinfection undertaken at Buona Vista Road and Ayer Rajah Road; *Small-pox* at Pulau Brani Smelting Works, at Changi Road, and at Singapore United Rubber Estates in Yeo Choo Kang Road; *Chicken-pox* ex Raffles Museum; *Diphtheria* at Upper Serangoon Road, Pulau Brani Smelting Works and Telok Blangah Road; *Enteric* at Tank Road Railway Quarters.

A cell at the General Hospital was disinfected after occupation by a case of Cerebro-Spinal Meningitis.

A lot of books in the Colonial Secretary's Office were found to be infected with the little Anobium: "*Sitodrepa panicea*", and were duly treated—I think with success.

Visits to lepers on the isolation list, and inspection of houses previous to occupation by them, were made at the following places: Reformatory Road, Changi Road, Joo Chiat Road, Thomson Road, Teluk Kurau Road, and McPherson Road.

A site suggested for a vernacular school was inspected at Lorong 16, Gaylang, and duly passed. A nuisance was dealt with at East Coast Road. Mosquito surveys were made near the Reformatory and at the Government plantation in Stevens Road.

A routine visit was paid to the Ulu Bri Estate at the end of Choa Choo Kang Road. The Marine Department lines at Pulau Brani were inspected on three occasions. I should like again to bring forward the necessity for a proper staff of Sanitary Inspectors for rural work.

I think also that it would be highly advisable to establish Government Dispensaries at the following centres:—Pasir Panjang, Bukit Timah, Payah Lebar, Seletar, and Bedok. This would not only be a boon to the public at these flourishing village centres, but the Assistant Surgeons might prove of noteworthy value in securing the better sanitation of these villages and their surroundings, and the proper vaccination of the general populace.

7. *Quarantine Station*.—The total passengers admitted during the year were 78,881; the maximum in residence on any one day being 3,491. The total sick treated was 252; of which Cholera accounted for five, Small-pox for 28.

There were 35 deaths, giving a death-rate of 13.09 per cent amongst those treated. The vaccinations performed numbered 12,733.

No new public works were undertaken during the year.

The distilling plant worked well, but the high price of wood rendered it advisable to distill only 71,400 gallons, and otherwise to rely on the cheaper Singapore water which can be pumped directly into the reservoir by Hammer & Co.'s steam water-boats. The distilling plant and staff are however an

indispensable requirement for the Station since it is a necessity for an isolated place like St. John's to have the means for a selfcontained and pure water-supply. They also run the five disinfecting plants and look after other machinery, etc., throughout the island thus saving us much money in the long run.

I also hope that we shall be able to get a dynamo installation in the main engine-room after the war, and thus solve the lighting problem for the station.

Our small meteorological station showed a rainfall of 94.6 inches during the year.

QUARANTINE, PENANG.

REPORT BY DR. F. R. SAYERS, B.A., M.D., D.P.H., *Port Health Officer, Penang.*

1. *Port.*—Visits were paid to 367 ships and 33,936 crew units and 132,226 coolies and passengers were examined.

Fifty ships carried 78,407 "Indian Immigrant Coolies" to Penang and of these 35,367 were sent to the Quarantine Station for vaccination.

Two hundred and sixty "Chinese Immigrant Ships" arrived with 38,879 "Chinese Immigrants" on board.

Not a "Pilgrim Ship" touched at Penang in 1917.

Eight ships were "infected", the cause on six was Small-pox and on two Cholera. Of these ships six came from Negapatam and Madras, one came from Bombay and one from Calcutta.

Vaccination of "Emigrants" was enforced under the provisions of section 43 of the Quarantine and Prevention of Disease Ordinance, 1915.

It has been observed throughout the year that the vaccinations on "immigrants" from China were greatly superior to those on "immigrants" from India.

Endeavours have been made by the writer to have a vaccination certificate similar to that recommended by the Chief Health Officer, Straits Settlements, adopted by the Indian Vaccinators.

It will then be possible to classify the methods and success of these vaccinators with a view to prohibiting the employment of undesirable operators.

The disinfecting launch "Kite" was used 147 times at the requests of Shipping Agents and once on an "infected ship". Certificates of Disinfection were issued to all these ships. The total charges for these services amounted to \$5,186.25.

Seven permits "to bury ashore" were granted after inspection for corpses on ships or tongkangs.

Permission to import, tranship or export coffins containing corpses was granted on thirteen occasions.

Bills of Health were carried by 437 ships on departure.

For the first seven months and on many days during the remainder of the year Mr. WESTERHOUT, Assistant Surgeon in charge of Chowrastra Dispensary inspected ships in the absence of the writer on extra-Municipal health work.

On February 15th Mr. WONG SOON LOY was attached as Chinese Clerk and Interpreter to the Port Health Office.

Statement "A" gives particulars of inspections for the past 17 years.

2. *Quarantine Station*.—The total number admitted from 77 ships was 37,595 of which 35,367 were “Indian Immigrant Coolies” and 2,228 were ordinary deck passengers.

The average daily number of inmates was 820.

The following cases were admitted to the Station Hospitals:—

	Cases.
Cholera	12
Plague	—
Small-pox	11
Chicken-pox	27
Measles	35
Dysentery	77
Malaria	27
Pneumonia	35
Other diseases	489
Total	713

At the Dispensary 1,873 patients received treatment.

There were 50 deaths giving a death-rate of 1·9 per cent of patients and 0·13 per cent of the inmates.

Regarding the Cholera cases, Mr. NICKELSEN, resident Assistant Surgeon, noted the absence of rice water stools in ten of the patients, the typical appearance of many of the vibrios seen in Rectal Smears and the rapid recovery of one patient without Hypertonic Saline Injections.

During 1916 it was noticed that the number of cases of Pneumonia (lobar and broncho) were considerably above the average. The incidence was however less in 1917.

All the cases were amongst “Indian Immigrants Coolies”; the ordinary deck-passengers travelling by the same boats were unaffected.

No local cause has been discovered and as the majority of the cases had probably been infected before arrival at the station, the source of infection would appear to have been on the ships or in India.

On October 19th, 1917, the importation into the Colony of sheep or goats from the Presidency of Madras was prohibited on account of the existence amongst them of “Contagious pleuro-pneumonia”. This prohibition was not followed by a diminution in the number of cases of Pneumonia received at the station.

The yearly incidence of Pneumonia at the New Quarantine Station since its opening is:—

Year.	Cases.	Deaths.	Total coolies.	Cases per 1,000.
1912 ...	7	3	33,534	2
1913 ...	4	3	34,661	1
1914 ...	6	2	18,041	3
1915 ...	9	4	21,363	4
1916 ...	34	9	29,539	11
1917 ...	35	14	35,367	9

I understand that there has been a great increase in the number of cases of Pneumonia at Port Swettenham Quarantine Camp during the past two years.

Vaccinations with Heanley's lymph were performed on 36,808 inmates. The percentage of success was 73.

The total rainfall was 2029.75 millimetres on 136 days. The greatest fall in 24 hours was 103.75 millimetres.

Mr. NICKELSEN continued as Resident Assistant Surgeon throughout the year.

The post of Lay Superintendent remained vacant.

The health of the staff has been satisfactory, particularly as regards Malaria, this disease caused but two of a staff of forty-nine to be off duty.

A contract was entered into with the United Engineers to maintain in order the Jewell Filter. Analyses of the filtered water show a uniform excellence.

Public Works.—An overflow pipe from the salt water reservoir to the main drain was completed.

Replacement of the zinc latrine tanks in the camps with cast-iron tanks was commenced and continued during the year.

Several minor works were carried out.

Statement B contains Quarantine Statistics for the past 12 years.

3. *Extra Municipal Work.*—The Settlement was free from Cholera and Plague except for one case of Cholera, six cases of Plague—all within Municipal Limits, and two cases of Cholera in the Province.

There was a continuance of the small-pox epidemic of 1916, the number of cases in the Settlement increasing from 249 in 1916 to 522 in 1917.

The cases with their contacts were as far as possible isolated in temporary quarantine camps situated near the numerous foci of infection.

Of these camps many were erected at the desire of, and by, the surrounding inhabitants.

It is probable that this concession resulted in a lesser concealment of cases than would have occurred if all the cases and contacts had been removed to distant camps certainly much time, transport and disinfection was saved to the Health Department.

For the first half of the year vaccinations or re-vaccinations were performed on as many natives as could be induced to consent. The headmen of the various kampongs were interviewed, the necessity of immediate vaccination was pointed out to them and they were asked to arrange meetings of their people for vaccination. In many kampongs the great majority of the inhabitants attended these meetings.

To compel the remainder to attend notices approved of by the Solicitor-General were served under the provisions of section 42 (1) of the Quarantine and Prevention of Disease Ordinance, 1915 on the neighbours of any small-pox case. These notices have been very successful but it is unlikely that small-pox will be permanently stamped out in the Settlement until compulsory vaccination can be enforced at the discretion of the Health Department.

As proof of the necessity for compulsion the contemptuous refusals to be vaccinated of the fishermen at Tanjong Tokong, Penang Island, is a notable instance. Every possible effort short of compulsion was exerted by the Acting Resident Councillor, Penang, the Collector of Land Revenue and the writer without success and these unvaccinated fishermen numbering about two hundred remain a danger to the community.

In all 14,534 vaccinations or re-vaccinations were accomplished.

Other preventive work consisted of:—

Disinfection of infected or suspected houses and clothing.

House-to-house inspections.

Inspections of estates, kebuns, quarries, dairies, schools, police stations, etc.

Inspections of hired motor cars, bullock-carts and other vehicles passing through infected areas and when necessary the vaccination of the occupants.

Police guards were placed over camps, infected houses and entrances and exits to infected areas.

The Medical Officer, Province Wellesley, carried out the necessary health work in that district throughout the year. The results are reported separately. The writer specially visited Bakap Rubber Estate in connection with its water-supply.

Two estates in the Dindings were inspected and various recommendations made departmentally.

Valuable assistance was rendered by the Police when requested.

On March 1st the writer was appointed to act as Senior Health Officer, Straits Settlements.

Statement *C* is a copy of the Vaccination Notice referred to above.

Statement *D* gives cases of Cholera, Plague, and Small-pox in 1917.

STATEMENT A.

PARTICULARS OF INSPECTIONS FOR 12 YEARS.

Year.	Vessels.	Units of crew and passengers inspected.	Total landed on Quarantine Station.
1901	1,309	200,186	2,188
1902	1,000	180,632	5,755
1903	957	180,251	1,688
1904	748	184,691	2,217
1905	869	214,136	10,406
1906	675	204,988	23,288
1907	633	219,839	17,650
1908	1,205	176,119	21,175
1909	503	161,971	23,058
1910	526	217,967	71,876
1911	1,144	277,151	134,957
1912	634	287,373	55,493
1913	818	272,473	53,937
1914	1,040	215,067	48,399
1915	405	148,662	23,176
1916	662	213,726	42,736
1917	367	166,162	37,595

STATEMENT B.

QUARANTINE STATION, PARTICULARS OF 12 YEARS' WORK.

Year.	Total Inmates.	Daily Average Inmates.	Cholera treated.	Plague treated.	Small-pox treated.	Vaccinations performed.	Total deaths.	Percentage of deaths.
1906 ...	23,288	461	8	2	16	6,490	34	·14
1907 ...	17,650	116	24	1	4	5,652	38	·21
1908 ...	21,175	366	9	2	51	5,691	18	·08
1909 ...	23,058	359	2	1	25	5,614	10	·04
1910 ...	71,876	1,584	33	2	62	12,205	98	·13
1911 ...	134,957	3,740	387	1	109	63,988	656	·48
1912 ...	55,493	1,111	4	4	75	38,297	61	·01
1913 ...	53,937	120	12	1	11	37,276	45	·08
1914 ...	48,399	116	9	...	171	32,609	131	·27
1915 ...	23,176	478	...	...	3	21,562	11	·04
1916 ...	42,736	817	1	...	11	36,806	17	·03
1917 ...	37,595	820	12	...	11	36,808	30	·13

STATEMENT C.

To

OCCUPANT OF A HOUSE AT

As a case of small-pox was found at _____ in a house in the vicinity of the house occupied by you and as in my opinion you and the other occupants of your house have thereby been subjected to the risk of infection from small-pox, I hereby direct that you and the other occupants of your house be forthwith vaccinated or re-vaccinated.

If you and the other occupants of your house attend _____ at _____

on _____, 191____, you will be vaccinated or re-vaccinated. If you or any other occupants of your house refuse to be vaccinated or re-vaccinated you or any occupant who refuses will be prosecuted.

Dated _____, 191____.

Health Officer.

کشف
بخدمت درومه نمبر
جالن
برهمنبران رومه بځ کامو دیم ایت مک قد
برمول تله ددافتی فپاکیه چاچر درومه نمبر
فیکران ساي هاروسله کامو سق سکلین مربک ۲ لاین بخدمت درومه کامو ایت ترجغیکه فپاکیه چاچر ایت دان
دری کارن ایت اینله دفرته کامو دان سکلین مربک ۲ لاین بخدمت ددالم رومه ایت منانم چاچر مک سکبران
تله دنانم دهولو مک هندقله منانم کمالی قول *

مک سکبران کامو دان سکلین مربک ۲ لاین بخدمت ددالم رومه ایت دانغ حاضر
قد فوکل قد هاریولن ناهن 19 مک کلک دافتله دنانم انوفون دنانم چاچر
ایت کمالی قول *

مک جکلو کامو انو سبارغ مربک ۲ لاین بخدمت درومه ایت اغکن منورت دانس بخدمت ایت مک
ای کلک ددعوا ادا *

بتاریخ هاریولن ناهن 19

فکاوی کصجانن

STATEMENT D.

1917. Cases of	Municipality.	Rural Districts.	Province Wellesley.	Dindings.	Settlement.
Cholera ...	1	Nil.	2	Nil.	3
Plague ...	6	Nil.	Nil.	Nil.	6
Small-pox ...	23	174	331	Nil.	528

APPENDIX G.

GOVERNMENT ANALYST'S DEPARTMENT, SINGAPORE.

REPORT BY DR. FRANKLAND DENT, M.S.C., P.H.D., F.I.C., *Government Analyst, S.S.*

The following table shows the Revenue and Expenditure for the year 1917, and, for comparison, the Revenue collected during the preceding year :—

Revenue.	1916.	1917.	Expenditure, 1917.	
<i>Fees of Office.</i>	\$ c.	\$ c.		\$ c.
Petroleum Inspection ...	4,720 00	2,880 00	Personal Emoluments	13,443 15
Miscellaneous ...	8,644 00	8,758 50	Stores from England	a 500 00
			Miscellaneous ...	524 70
Total ...	13,364 00	11,638 50	Transport, Travelling & Personal Allowances	247 91
By sales of Pyridine ...	871 00	548 80	Total ...	14,715 76

(a) Estimated.

Petroleum.

(a) KEROSENE.

The following table gives a comparison between the quantities tested on importation into the Island of Singapore during the years 1916 and 1917:—

Description of Oil.		1916.			1917.		
		Number of Consignments.	Tins.	Tons.	Number of Consignments.	Tins.	Tons.
<i>Case Oil.</i>							
American Oil.	Devoe's ...	4	86,280	...	6	59,546	...
	S. Arrow ...	6	218,920	...	9	171,886	...
	Crown ...	61	270,970	...	73	344,190	...
	Dragon ...	22	102,228	...	23	106,200	...
Langkat Oil.	Cross ...	11	11,794	...	13	12,900	...
	R. Sun ...	15	33,466	...	16	28,088	...
	L. Glass ...	9	9,000	...	8	8,000	...
	Fish ...	13	8,281	...	11	7,400	...
Borneo Oil ...	...	10	4,300	...	9	3,178	...
<i>Bulk Oil.</i>							
Pulau Samboe ...	...	2	...	79.0	4	...	156.6133
Pulau Bukom ...	...	7	...	278.2	3	...	118.5
Total ...	...	160	745,239	357.2	175	741,388	275.1133

One consignment of 3,000 tins of Crown oil was tested on importation and found to flash below 73° Fahr. and declared dangerous.

Six consignments were tested for flash-point and certificates issued for kerosene consigned to Hongkong.

Eleven samples were tested for their flash-points for the purpose of adjusting the readings given by various instruments with those given by the standard one kept in this laboratory.

(b) BENZINE.

The following table gives a comparison between the quantities imported into the Island of Singapore during the years 1916 and 1917:—

Nature of Receptacles.		1916 (212 consignments).		1917 (287 consignments).	
		Number.	Gallons.	Number.	Gallons.
2-gallon cans ...	...	134,200	268,400	231,900	463,800
4-gallon drums ...	...	47,912	191,648	29,000	116,000
Total ...	...	182,112	460,048	260,900	579,800

The receptacles were in all cases examined to see whether they fulfilled the conditions laid down in the Rules and By-laws under the Petroleum Ordinance.

(c) MINERAL TURPENE.

One thousand three hundred and fifty tins were imported into Singapore and tested for flash-point, as compared with 700 tins in 1916.

(d) LIQUID FUEL.

Forty-seven samples were tested for their flash-points.

Fifty samples were tested as to whether they were in accordance with the Admiralty specification as regards flash-point and the percentage of water.

(e) TESTING VESSELS FOR DANGEROUS PETROLEUM VAPOUR.

Forty-six vessels were tested for inflammable vapour by means of Redwood's Standard Instrument, either before being allowed to enter Port limits under Rule 23 of the Petroleum Ordinance or to enter Dry Dock under By-law 77 of the Straits Settlements Ports Ordinance, 1912.

Explosives.

Two consignments of explosives were tested on importation into Singapore in accordance with the Rules under the Arms and Explosives Ordinance, 1913.

All passed the prescribed tests.

The following table gives the details of these and, for the purpose of comparison, those imported and tested during the two preceding years:—

Year.	Number of consignments.	Number of packages of 50 lbs. each.				Total.
		Dynamite.	Gelignite.	Blasting Gelatine.	Gelatine Dynamite.	
1915 ...	10	600	2,934	1,320	...	4,884
1916 ...	6	500	2,260	50	300	3,110
1917 ...	2	100	2,111	...	500	2,711

In addition to the above 124 cases of detonators were imported, as against 27 cases in 1916.

Minerals, Metals, etc.

Forty-three samples of minerals, including amongst others Wolframite, Scheelite, Tin Ore, Gold Quartz, Molybdenite, etc., were assayed during the year, as against 37 samples in 1916.

Forty-nine samples were sent in for identification.

In addition 11 samples of metals and alloys were also assayed.

Liquors.

Eleven samples were sent in for determination of their spirit strengths.

Of five samples of whisky and 10 of brandy, three of the former and all of the latter were found to be spurious, being mainly composed of arrack or some other silent spirit.

(a) METHYLATED SPIRITS.

Five hundred and ninety-five drums and 35 cases equal to approximately 71,110 gallons of arrack were methylated for industrial purposes, as against 479 drums and 93 cases equal to approximately 65,070 gallons in 1916.

Counterfeit Coins.

Five sets of exhibits for counterfeiting Straits Settlements subsidiary silver coins were sent in by the Police for examination.

On account of the present difficulty in obtaining German-made Britannia metal spoons, various alloys of other metals easily obtained locally have been employed.

Chemicals and Drugs.

Seventeen samples were received under this heading for analysis.

Four packets of morphine hydrochloride, seized by the Inspector under the Singapore Harbour Board, were found to contain 6,000 grains of the pure drug.

A number of medicines, seized by the Head of the Preventive Service were sent in for the examination as to the presence of deleterious drugs.

Solutions of the hydrochlorides of the emetine alkaloids were prepared at various times from ipecacuanha root for the Singapore Hospitals.

Toxicology.

Seventeen specimens of stomach contents, etc., three of which came from Malacca, were sent in for examination for poisons.

Opium or some extract of the same was found in five cases, both arsenic and mercury in two cases and arsenic, mercury and morphine in one case each.

Four specimens were sent in for the detection and estimation of alcohol.

Three specimens taken from cattle, of which one came from Malacca, were examined for poisons. One specimen was found to contain arsenic.

A specimen of cattle food from Johore contained $20\frac{1}{4}$ grains of white arsenic mixed with metallic mercury.

Three exhibits in connection with cases of poisoning were received. One consisted of a mixture of powdered quartz and laterite and another of strong nitric acid.

Urine.

Twenty-two specimens were sent in for examination and report.

Water.

Eighteen samples were sent in for analysis and report as to their suitability for domestic purposes and nine others in connection with boiler and other special purposes.

A further 18 had been taken from oil borings.

Milk.

Eighteen samples were received, of which eight were reported as of very low quality, one as containing at least 7.5 per cent and another 19 per cent of added water. The last contained in addition 1.2 per cent of cane sugar.

One sample of condensed milk and one of cream were also analysed.

Miscellaneous.

Other samples, not included under the above heads, which were sent in for analysis and report included:—six each of oil cake and cutch, three of coconut oil and three test meals, two each of lubricating oil and Siak rubber and one each of paint, rubber strips, boiler scale, zinc chloride solution Straits one-cent pieces, Kelantan “pitis” and two of clothing and gunny bags for proof of damage by sea-water.

Personnel.

Mr. JAMES SHELTON, F.I.C., left the Department on the 10th February, 1917, on his promotion to the post of Chemist to the Federated Malay States Geological Department. To fill his place two fresh posts of Laboratory Assistants were created, to which Messrs. LIONEL CRESSON and LIM CHOON SENG were appointed on the 10th April, 1917.

GOVERNMENT ANALYTICAL DEPARTMENT, PENANG.

REPORT BY MR. J. C. COWAP, B.SC., F.I.C., *Deputy Analyst, Penang.*

The following table gives the details of Revenue and Expenditure for the Department in 1917. The Revenue for 1916 is given for comparison.

Revenue.	1916.	1917.	Expenditure 1917.
	\$ c.	\$ c.	\$ c.
Petroleum Inspection Fees	3,285 00	2,940 00	Personal Emoluments 5,881 36
Miscellaneous ...	498 00	383 50	Stores ... 234 57
Certificate for Export of Petroleum Fees ...	245 50	234 50	Miscellaneous ... 187 29
			Transport & Traveling Allowances ... 187 19
Total ...	4,028 50	3,558 00	Total ... 6,490 41

The number of reports issued on general analytical work was 416, and 101 Reports were made on petroleum tested.

Petroleum.*(a) KEROSENE.*

Forty-eight consignments were tested as to the Flash Point. All samples were found to flash above the Standard Temperature (73° F.).

Particulars of the kerosene imported and tested are given in the following table:—

Description of oil.				Number of Consignments.	Tins.	Tons.	
<i>Case oil.</i>							
American oil	Sylvan Arrow	...	...	1	50,000	...
Langkat oil	Lamp Glass	...	}	14	5,450	...	
	Fish Brand	...			4,850	...	
<i>Bulk oil.</i>							
Pulau Soe-Soe	...	...	...	33	...	10,003'85
Total				...	48	60,300	10,003'85

(b) DANGEROUS PETROLEUM.

Forty-three consignments representing 496,768 gallons of petrol were imported during the year. The containing receptacles were examined in accordance with the rules under the Petroleum Ordinance.

(c) PETROLEUM RESIDUE.

Twelve consignments representing 7,046 tons and 9,750 gallons of liquid fuel were imported and examined. All samples flashed above 150° F.

Explosives.

Four consignments were imported during 1917, and were tested under the provisions of the Explosives Ordinance. Details are given below :—

		<i>No. of Importation.</i>	<i>No. of Cases.</i>	<i>Weight in lbs.</i>
		<hr/>	<hr/>	<hr/>
Gelignite	...	3	1,040	52,000
Dynamite	...	1	10	500

Spirits.

Eight hundred and thirty-two samples of spirit were examined for the purpose of assessing the duty payable on them.

Eighteen other samples of liquors were examined for other purposes. These included brandy, whisky, wine, toddy etc.

Toxicology.

Viscera, etc., in 13 cases of suspected poisoning were analysed. The poisons detected were opium (two cases), alcohol (two cases), Atropine (three cases), Oxalic acid (one case), and Indian Hemp (one case).

In four cases no poison could be discovered.

Bhang.

Sixty-one cases of importation or possession of bhang were investigated on behalf of the Monopolies Department. The exhibits numbered 170 and consisted chiefly of packets of bhang or mixtures of bhang.

Opium and Chandu.

One hundred and ninety-three reports on opium, chandu or chandu dross were made to the Monopolies Department.

Drugs and Medicines.

Fifty-one samples of various medicines were examined. These included a number of proprietary articles as well as opium and anti-opium pills of local manufacture.

Blood Stains.

Fifty-seven exhibits were received from the Police for examination for the presence of blood. Blood was found in most of them.

Water.

Nineteen samples of water were analysed as to their fitness for drinking or industrial purposes. All these came from the Rural Districts of Penang Island or Province Wellesley and the Dindings.

Miscellaneous.

A number of miscellaneous samples were analysed. These included milk, sugar, copra, urine, coins, rice, toddy, tin, rubber, ores, cloth, tea, soda ash, methylated spirits, tobacco, dried milk, etc.

One sample of rubber was found to contain 25 per cent of tapioca starch.

In addition to the above about 800 samples of milk were analysed for the Municipality.

Staff.

Mr. J. W. HADDON was in charge of the Department from the 1st to 15th January, when I took over from him.

APPENDIX H.

REPORT ON THE KING EDWARD VII MEDICAL SCHOOL,
SINGAPORE, FOR 1917.(BY DR. J. T. DUNCAN, F.R.C.S., *Acting Principal.*)

Dean (ex-officio) ... F. B. CROUCHER, M.B. (Acting P.C.M.O.)

Permanent Staff.

Principal ... { R. D. KEITH, M.A., M.D. (Aberd.)
 ... { J. T. DUNCAN, F.R.C.S. (Acting)

Assistant Principal ... T. D. KENNEDY, M.A., M.B.

King EDWARD VII Professor J. A. CAMPBELL, M.D., D. Sc. (Edin.)

Tutor ... A. J. THUMBOO, L.M.S.

Lecturers.

Chemistry and Physics ... F. DENT, Ph. D., F.I.C., M.Sc.

Biology ... Prof. J. A. CAMPBELL, M.D., D. Sc.

Anatomy ... T. D. KENNEDY, M.A., M.D.

Physiology ... { Prof. J. A. CAMPBELL, M.D., D. Sc.
 ... { J. T. DUNCAN, F.R.C.S. (Acting).

Materia Medica ... T. MURRAY ROBERTSON, M.D. (Edin.)

Pharmacy ... G. W. CRAWFORD, M.P.S.

Forensic Medicine ... H. J. GIBBS, M.R.C.S., L.R.C.P. (London)

Hygiene ... G. E. BROOKE, M.A., D.P.H., L.R.C.P.

Pathology ... G. A. FINLAYSON, M.A., M.B. (Aberd.), M.R.C.P.

Medicine ... D. J. GALLOWAY, M.D., F.R.C.P. (Edin.)

Clinical Medicine ... { J. T. DUNCAN, F.R.C.S., L.R.C.P.
 ... { G. A. FINLAYSON, M.A., M.B. (Aberd.), M.R.C.P.

Surgery and Clinical Surgery { C. J. SMITH, F.R.C.S., M.B.
 ... { J. R. MC VAIL, M.B.

Midwifery ... F. B. CROUCHER, M.B. (Aberd.)

Practical Midwifery ... Staff of Maternity Hospitals.

Ophthalmology ... T. W. H. BURNE, M.B., B.S.

Lunacy ... H. J. GIBBS, M.R.C.S., L.R.C.P.

I. *School Council.*—I have regretfully to record the deaths during the year of the Hon'ble Dr. W. GILMORE ELLIS (Dean) and Mr. TAN JIAK KIM, c.m.g., (Member of Council), each had rendered invaluable services to the school. Dr. ELLIS first as a lecturer and later as Dean and President of the School Council. Mr. TAN JIAK KIM as one of the founders, a generous subscriber and a Member of Council since the foundation of the School.

Dr. ELLIS' place as Dean has been taken by Dr. F. B. CROUCHER, Acting Principal Civil Medical Officer, Mr. TAN SOO BIN has been elected provisionally in the place of the late Mr. TAN JIAK KIM and Mr. LEE CHOON GUAN has been elected to the seat rendered vacant by the death of Mr. TAN CHAY YAN in 1915.

2. *Numbers, etc.*—Thirty-one Students joined the Full Course which now numbers 86. It is satisfactory to report that there was only one dismissal during the year. The following obtained the L. M. S. Diploma:—

MOHAMED ARIFF.	OON SIM KONG.
S. MOHD. BABOO.	K. V. VEERASINGAM.
LOH POON LIP.	NG BOW HUAH.
T. CANAGARATNAM.	V. D. PENNEFATHER.
S. T. AYATHURAI.	C. J. PAGLAR.
S. ARASARATNAM.	N. MOOTOOTAMBY.
L. S. PERERA.	G. S. WOODHULL.
K. SINNADORAI.	CHIA KENG HOE.
I. MOHD. GHOWS.	GOH TONG SIN.

Fourteen of the above joined the Government service, 10 going to the Straits and four to the Federated Malay States. The remaining four have taken private practice.

Eighty-five students have taken the diploma since May, 1910.

Staff, etc.—Dr. R. D. KEITH, the Principal, has continued on sick leave during the year.

Dr. G. A. FINLAYSON returned in January and resumed the teaching of Pathology and Clinical Medicine. Dr. T. D. KENNEDY returned in April and took up the duties of Acting Principal and resumed the teaching of Anatomy. Dr. J. T. DUNCAN ceased to act as Principal and Lecturer on Anatomy and on appointment as Consulting Physician to Tan Tock Seng's Hospital took up the teaching of Clinical Medicine.

Drs. C. J. SMITH and J. R. McVAIL returned at the commencement of the short session and resumed the teaching of Surgery which had been carried on in their absence by Drs. J. W. ADAMS and T. W. H. BURNE. At the end of the Short Session Prof J. A. CAMPBELL left for eight months' vacation. During his absence the teaching of Physiology is being carried on by Dr. J. T. DUNCAN. At the same time Dr. T. D. KENNEDY became ill and two months later left the Colony on four months' furlough. The work of Acting Principal has since been carried on by Dr. J. T. DUNCAN and the teaching of Anatomy by Dr. T. W. H. BURNE and Mr. A. J. THUMBOO.

4. *Discipline.*—The behaviour of the students has been excellent.

5. *Hospital Assistants.*—Since 1908 certificates have been granted to 130 Hospital Assistants. There are at present 22 attending.

6. *Other Examinations.*—The Dental Certificate has been granted to SENICHI IMAI, H. IHIJIMA KAMEKICHI HASHIMOTO, and TEIICHI MOTOMATSU.

The Licensed Chemist's certificate has been granted to CHEW BOON EE.

7. *General.*—As heretofore the local general practitioners and others have been very kind in giving their services as Lecturers and Examiners.

APPENDIX I.

PATHOLOGICAL DEPARTMENT.

REPORT BY DR. G. A. FINLAYSON, .B., Ch.B., M.R.C.P., *Government Pathologist.*

Laboratory, Sepoy Lines.

Total number of specimens examined	...	...	1,640
Widal's reaction for			
(a) "Enterica"			
Typhoid Fever, positive	...	...	60
negative	...	...	304
(b) Dysentery—bacillary, positive	...	...	3
			367
<i>Malaria</i> :—			
Parasite present	...	...	15
,, absent	...	...	63
			78
<i>Relapsing Fever</i> :—			
Parasite present	...	...	1
			1
<i>Diphtheria</i> :—			
K. L. B. present	...	...	6
,, absent	...	...	7
			13
<i>Gonococcus</i> :—			
Organism present	...	...	4
,, absent	...	...	3
			7
<i>Syphilis</i> :—			
Wassermann reaction, positive	...	...	400
partial	...	...	53
negative	...	...	301
			754
<i>Sputum for T. B.</i> :—			
Bacillus present	...	...	20
,, absent	...	...	36
			56
<i>Leprosy</i> :—			
Bacillus present	...	...	5
,, absent	...	...	14
			19
<i>Faeces</i> :—			
Ova present	...	...	27
,, absent	...	...	30
			57
B. Typhosus present	...	...	3
,, absent	...	...	77
			80
B. Dysenteriae present	...	...	8
,, absent	...	...	40
			48
Amoebæ present	...	...	8
,, absent	...	...	19
			27
Lambliæ present	...	...	1
			1
Schistosomum ova present	...	...	2
			2
<i>Urine</i> :—			
Casts, etc.	...	...	54
			54
<i>Pus</i> :—			
Cerebro-spinal fluid, etc.	...	...	23
			23
Vaccines prepared	...	...	3
			3
Histological sections	...	...	35
			35
Differential leucocyte count	...	...	2
			2
<i>Fauces</i> :—			
Examination for Meningococcus present	...	...	1
,, absent	...	...	12
			13
			<hr/>
			1,640
			<hr/>

ENTERICA.

An investigation has been carried out during the year with the purpose of demonstrating whether, by the serological test, Paratyphoid "A" or "B" is prevalent in Singapore or not.

Each specimen of serum was tested against stock cultures of the "Enterica" group but in only a few was there a slight reaction 1 in 20 to Paratyphoid "B" and in such the agglutination against B. Typhosus was uniformly higher so that one was dealing with patients having group agglutinins.

B. Typhosus was isolated from the blood or spleen in seven, from the stool in three cases, but at no time has an organism been obtained which falls into either the "A" or "B" group.

I prepared stock T. A B. vaccine in May, six cases were selected in Ward X, Tan Tock Seng's Hospital, having no agglutinins in their blood. Each received two injections of the recognised number of organisms at the usual interval. A week after the second dose each serum showed marked agglutinating power against B. Typhosus and Para "B" but practically no reaction with Para "A".

In two cases of "Enterica" with group agglutinins, Para B. 1 in 20 B. Typhosus only was recovered from the spleen at the subsequent postmortem examination. The Municipal Bacteriologist had one case which reacted to Para "B" but no record is made whether the organism was isolated, so further work will have to be carried out to totally exclude these members "A" and "B" of the "Enterica". As recorded in prior reports the Asiatic seeks entrance to hospital at a late stage of the disease, usually in the 3rd week, so that a blood culture is seldom requested, the Medical Officer being content with forwarding the serum for a "Widal Reaction". This may prove of little value as in several cases there have been no agglutinins present, while the patient has succumbed to the infection. In one case, European, I obtained from the blood a pure culture of B. Typhosus during a relapse, when the Widal Reaction was absolutely negative in a dilution of 1 in 20.

The question of the "Carrier Problem" in "Enterica," Dysentery, etc., has been raised in prior reports and a considerable amount of work is now being done at Home and elsewhere with a view to forming a decision on the method of treatment. As Enteric Fever and the different varieties of Dysentery occur here in considerable numbers means ought to be adopted of investigating each case prior to discharge from hospital though naturally it will be, in the beginning, extremely difficult to enforce that a "carrier" shall so dispose of his excreta that he prove no source of danger to other members of the community.

WATER SUPPLIES.

A few samples of water have been examined and reports forwarded.

Mortuary, Sepoy Lines.

Total number of autopsies 150; 83 were performed for the Coroner.

Return showing immediate cause of death.

Beri-beri	...	...	...	...	13
Lobar Pneumonia	...	...	...	...	7
Malaria	...	...	...	...	9
Tuberculosis	...	...	...	...	4
Enteric Fever	...	...	...	...	3
Dysentery	...	...	...	...	3
Cholera	...	...	...	...	3
Plague	...	...	...	...	4
Suppurative Peritonitis	...	...	...	...	3
Other septic conditions	...	...	...	...	4
Diseases of respiratory system	...	...	...	...	2
" " nervous	...	...	...	...	6
" " circulatory	...	...	...	...	13
" " alimentary	...	...	...	...	3
Neoplasm	...	...	...	...	3
Syphilis	...	...	...	...	3
Schistosemiasis	...	...	...	...	2
Accidents, poisoning, etc.	...	...	...	...	65
Total					150

Return showing incidence of diseases.

Beri-beri	...	...	...	...	13
Cholera	...	...	...	...	3
Enteric Fever	...	...	...	...	5
Malaria—acute	...	...	...	...	9
„ chronic	...	...	...	...	7
Dysentery, amœbic—acute	...	...	...	...	1
„ „ chronic	...	...	...	...	1
„ bacillary—acute	...	...	...	...	4
Pneumonia—lobar	...	...	...	...	9
Pyæmia	...	...	...	...	1
Sapræmia	...	...	...	...	1
Alcoholism	...	...	...	...	1
Schistosomiasis	...	...	...	...	2
Siriasis	...	...	...	...	1
Syphilis	...	...	...	...	10
Carbuncle	...	...	...	...	1

A. Nervous System.

Cerebral Gumma	...	...	...	...	3
„ Hæmorrhage	...	...	...	...	2
„ Laceration	...	...	...	...	13
„ Oedema	...	...	...	...	1
Meningitis—pneumococcic	...	...	...	...	1
„ cerebro-spinal	...	...	...	...	1
Hemiplegia	...	...	...	...	1
Hydrocephalus, acute	...	...	...	...	2

B. Circulatory System.

Aneurysm of Aorta	...	...	...	...	1
Aneurysmal Dilatation	...	...	...	...	1
Arterio-sclerosis—advanced	...	...	...	...	6
Endocarditis aortic—acute	...	...	...	...	1
„ „ chronic	...	...	...	...	5
„ mitral—acute	...	...	...	...	1
„ „ chronic	...	...	...	...	2
Thrombosis—portal vein	...	...	...	...	1
Pericarditis—acute	...	...	...	...	6
„ chronic	...	...	...	...	1
Shock following injury	...	...	...	...	2
Syncope	...	...	...	...	3

C. Respiratory System.

Laryngitis—syphilitic	...	...	...	...	1
Bronchitis—acute	...	...	...	...	1
Bronchopneumonia	...	...	...	...	3
„ septic	...	...	...	...	1
Tuberculosis of Lung—active	...	...	...	...	8
„ „ „ —quiescent	...	...	...	...	3
Silicosis of lung	...	...	...	...	1
Pleuritis—acute	...	...	...	...	2
Pleural adhesions—recent	...	...	...	...	11
„ „ chronic	...	...	...	...	13
„ „ tuberculous	...	...	...	...	10
Empyema	...	...	...	...	1

D. Digestive System.

Gastritis—acute	...	...	...	...	1
Gastric Ulcer	...	...	...	...	4
Calculus, biliary	...	...	...	...	3
Cholangitis septic	...	...	...	...	2
Hepatic Cirrhosis	...	...	...	...	4
Perihepatitis, chronic	...	...	...	...	3
Enterocolitis, acute	...	...	...	...	1
Cyanotic Atrophy of Liver	...	...	...	...	6
Carcinoma of Liver	...	...	...	...	3
Gumma	„	...	...	...	1
Abscess	„	septic	...	...	1
Splenic infarct	...	...	...	...	2
Suppurative peritonitis	...	...	...	...	8
Tuberculosis of gut	...	...	...	...	4
„	„	Mediastinal glands	...	...	2
Nephritis—parenchymatous	...	...	...	...	1
„	„	—interstitial	...	...	3
Infarct of kidney	...	...	...	...	1

H. Affections produced by external causes.

Asphyxia	...	...	...	...	1
Drowning	...	...	...	...	5
Fracture, skull	...	...	...	...	22
„	„	spine	...	...	6
„	„	femur	...	...	1
„	„	ribs	...	...	6
„	„	sternum	...	...	1
„	„	clavicle	...	...	1
„	„	humerus	...	...	1
„	„	radius	...	...	1
„	„	pelvis	...	...	1
Stab wounds	...	...	...	...	11
Multiple injuries, motor car, etc.	...	...	...	...	4
Rupture of spleen	...	...	...	...	3
„	„	„ liver	...	...	3
Laceration of gut	...	...	...	...	1
Haemorrhage into spinal canal	...	...	...	...	1
Electrocution	...	...	...	...	1
Gunshot wounds	...	...	...	...	2
Strangulation	...	...	...	...	1
Poisoning, Opium	...	...	...	...	2
Perchloride of Mercury	...	...	...	...	1

K. Varied Conditions.

Abscess, abdominal	...	...	...	...	1
„	„	retropharyngeal	...	...	1

Mortuary, Tan Tock Seng's Hospital.

Total number of autopsies 922; 91 were performed for the Coroner, 148 died within 24 hours while a further 95 died 24 to 48 hours after admission into hospital

Return showing immediate cause of death.

Beri-beri	...	...	...	103
Lobar Pneumonia	...	...	...	57
Accidents, etc.	...	...	...	34
Tuberculosis	...	...	...	139
Enteric Fever	...	...	...	17
Diseases of nervous system	...	...	...	16
„ „ circulatory system	...	...	...	37
„ „ respiratory „	...	...	...	32
„ „ alimentary system	...	...	...	30
„ „ genito-urinary system	...	...	...	30
Varied septic conditions	...	...	...	50
Syphilis	...	...	...	12
Malaria	...	...	...	99
Dysentery	...	...	...	177
Bubonic Plague	...	...	...	2
Suppurative Peritonitis	...	...	...	24
Ankylostomiasis	...	...	...	30
Schistosomiasis	...	...	...	3
Neoplasm	...	...	...	23
Still-birth	...	...	...	1
Senility	...	...	...	2
Splenic Anæmia	...	...	...	1
Tetanus	...	...	...	1
Unknown	...	...	...	2

Total ... 922

Return showing incidence of diseases.

Beri-beri	...	...	...	105
Dysentery, amœbic acute	...	...	...	45
„ „ chronic	...	...	...	144
„ bacillary acute	...	...	...	34
„ „ chronic	...	...	...	15
„ mixed acute	...	...	...	6
„ chronic	...	...	...	18
Enteric Fever	...	...	...	35
Pigmented Peyer's patches	...	...	...	12
Malaria, subtertian	...	...	...	72
„ benign tertian	...	...	...	2
„ quartan	...	...	...	7
„ mixed infection	...	...	...	6
„ unclassified	...	...	...	11
„ chronic	...	...	...	64
Malarial pigment, old	...	...	...	11
Ankylostomiasis	...	...	...	55
Sapræmia	...	...	...	14
Septicæmia	...	...	...	4
Pyæmia	...	...	...	2
Tuberculosis, general	...	...	...	23
„ miliary	...	...	...	2
Poisoning	...	...	...	5

A. Nervous System.

Cerebral Abscess ...	...	...	...	1
„ Softening	...	...	...	5
„ Gumma ...	...	...	...	5
„ Infarct ...	...	...	...	1
Haemorrhage subdural	...	...	...	2
„ cerebral	...	..	...	3
Cerebral Thrombosis	...	...	...	1
Hydrocephalus, acute	...	...	...	1
Meningitis, pneumococcic	...	...	...	5
„ septic ...	...	...	...	4
„ tuberculous	...	...	...	5
Myelitis, specific ...	...	...	...	2

B. Circulatory System.

Aneurysm thoracic aorta	...	...	...	5
Aneurysmal dilatation	...	...	...	15
Atheroma and syphilitic endarteritis	...	...	...	112
Fatty degeneration of heart	...	...	...	5
Endocarditis ulcerative	...	...	...	6
„ chronic	...	...	...	24
Myocarditis syphilitic	...	...	...	2
Pericarditis acute ...	...	...	...	11
„ chronic	...	...	...	8
„ tuberculous	...	...	...	7
Thrombosis iliac vein	...	...	...	3
„ splenic „	...	...	...	1
„ portal „	...	...	...	1

C. Respiratory System.

Bronchiectasis ...	...	...	..	5
Bronchopneumonia	...	...	...	32
Empyema, pneumococcic	...	...	...	8
„ hepatic abscess	...	...	...	2
„ tuberculous	...	...	...	2
„ septic ...	...	...	...	3
Emphysema, marked	...	...	...	17
Pulmonary Gangrene	...	...	...	3
„ Infarct	...	...	...	1
Mediastinal Sarcoma	...	...	...	1
Cancer of lung (one primary) ...	...	...	...	4
„ „ Antrum Highmore ...	...	...	...	1
Pyopneumothorax oesophageal ulcer	...	...	...	1
„ tuberculous	...	...	...	2
Pleurisy, acute ...	...	...	...	62
„ chronic ...	...	...	...	54
„ tuberculous	...	...	...	150
Tuberculosis of lung, active ...	...	...	...	169
„ „ „ quiescent	...	...	...	9
„ „ „ larynx ...	...	...	...	30
Anthraxis ...	...	...	...	3

Pneumonia, acute					
Right complete	2	} ... 22
„ upper lobe	...	...	...	1
„ middle „	...	...	...	2
„ lower „	...	...	...	5
„ middle and lower	...	...	...	2
Left complete	...	...	...	2
„ upper lobe	...	...	...	1
„ lower „	...	...	...	5
Both sides involved					
Right and left lower with right middle			...	2	
Pneumonia, chronic					
Right complete	9	} ... 50
„ upper lobe	...	...	...	2
„ middle „	...	...	...	3
„ lower „	...	...	...	7
„ upper and middle lobes	...	...	...	2
„ middle and lower „	...	...	...	1
„ upper and lower „	...	...	...	1
Left complete	...	...	...	2
„ upper lobe	...	...	...	1
„ lower „	...	...	...	12
Both sides involved					
Right and left lower lobes	10	

D. Digestive System.

Cancer of pharynx	...	...	...	1
„ „ oesophagus	...	...	...	2
Ulcer of stomach	...	...	...	8
Ulcer of duodenum	...	...	...	9
„ oesophagus	...	...	...	1
Cancer of stomach	...	...	...	7
Dilatation of stomach	...	...	...	2
Entero-colitis, acute	...	...	...	8
Retroperitoneal Sarcoma	...	...	...	1
Pyorrhoea alveolaris	...	...	...	3
Parotitis, septic	...	...	...	1
Appendicitis, acute	...	...	...	4
Stricture of rectum	...	...	...	1
Faecal Fistula	...	...	...	1
Hernia, inguinal	...	...	...	6
„ ventral	...	...	...	1
Tuberculosis—small gut	...	...	...	96
„ large	...	...	...	12
„ liver	...	...	...	26
„ spleen	...	...	...	26
Angioma of liver	...	...	...	1
Cholangitis, acute	...	...	...	8
Cholecystitis, acute	...	...	...	8
Hepatic Cirrhosis	...	...	...	28
Fatty degeneration of liver	...	...	...	9
Cancer of liver	...	...	...	12

Gumma of liver	...	...	...	5
" " spleen	...	...	...	1
Perihepatitis—chronic	...	...	...	23
Perisplenitis	...	...	...	15
Calculus, biliary	...	...	...	11
Abscess of liver—amoebic	...	...	...	6
" " septic	...	...	...	1
Splenic Infarct	...	...	...	12

Peritonitis.

Acute, general, due to Enteric Ulceration	...	...	9
" " " Dysenteric Ulcer	...	...	5
" " " Gastric	...	...	1
" " " Duodenal	...	...	3
" " " Appendicitis	...	...	4
" " " Strangulated Hernia	...	...	3
" " " Pyelonephritis	...	...	1
" " " Cholecystitis	...	...	1
" " " Gangrene of Scrotum	...	...	1
" " " Pelvic Abscess	...	...	1
" " " Splenic Infarct	...	...	1
" tuberculous	...	...	15
" pneumococic	...	...	5
" localized, due to Enteric Ulceration	...	...	1
" " " Dysenteric Ulcer	...	...	5
" " " Gastric	...	...	1
Chronic, general	...	...	3

E.—Diseases of Genito-Urinary System.

Nephrolithiasis	...	...	3
Nephritis—parenchymatous acute	...	...	6
" " " chronic	...	...	25
" " interstitial	...	...	32
Orchitis, acute	...	...	1
Sarcoma of testicle	...	...	1
Hydronephrosis	...	...	1
Pyonephrosis	...	...	1
Pyelonephritis	...	...	4
Gumma of kidney	...	...	1
Tubercle of kidney	...	...	23
Abscess—perirenal	...	...	3
Uraemia	...	...	3
Calculus, renal	...	...	6
Cystitis, acute	...	...	3
Fistula, urinary	...	...	1
Papilloma—bladder	...	...	1
Congenital cystic kidney	...	...	3
Renal Infarct	...	...	5

H—Affections produced by external causes.

Asphyxia—strangulation	...	...	2
" vomiting	...	...	1
Drowning	...	...	4
Fracture, skull	...	...	8
" spine	...	...	1
" ribs	...	...	4
" humerus	...	...	1
" radius	...	...	1
Multiple injuries	...	...	4
Rupture of spleen	...	...	2
" urinary bladder	...	...	1
Cut-throat	...	...	1
Stab wounds	...	...	6
Poisoning	...	...	5

K.—Various Conditions.

Abscess, pelvic	...	...	...	...	1
„ subdiaphragmatic	...	...	...	...	1
„ psoas	...	...	...	...	1
„ shoulder	...	...	...	...	1
„ thigh	...	...	...	...	1
Cellulitis, acute	...	...	...	...	6
Gangrene of trunk	...	...	...	...	5
„ limbs	...	...	...	...	9
Gumma of Sternum	...	...	...	...	3
„ rib	...	...	...	...	1
Tuberculous knee joint	...	...	...	...	1
Tuberculosis of bone	...	...	...	...	6
Otitis media—acute	...	...	...	...	1
Arthritis, septic—knee	...	...	...	...	1
„ „ hip	...	...	...	...	2
Kyphosis	...	...	...	...	3
Lordosis	...	...	...	...	3
Diverticular of small gut	...	...	...	...	1
Caries of lower jaw	...	...	...	...	1
Secondary haemorrhage, septic wound	...	...	...	...	1

Remarks.—As an enquiry into the high death-rate from communicable diseases, Tuberculosis, etc., is being conducted at present it is not necessary to enter into a discussion of the factors which lead to that result. The percentage of deaths from Malaria, Tuberculosis, Dysentery remains much as in former years.

Staff.—I resumed duty in January and there has been no change in staff during the period under review.

APPENDIX J.

ANNUAL REPORT ON THE MEDICAL DEPARTMENT, LABUAN, FOR THE YEAR 1917.

(By DR. T. C. A. CLEVERTON, M.R.C.S., L.R.C.P., *Medical Officer*).

Population and Health.—Table showing the estimated population and the birth and death-rates for the years 1915 to 1917:—

Year.			Estimated Population.	Births.	Deaths.	Birth-rate.	Death-rate.
1915	...	...	6,768	164	142	24·23	20·98
1916	...	...	6,862	296	202	43·13	29·44
1917	...	...	6,796	210	264	30·90	38·84

Both the birth and death-rates were highest during the third quarter. Of the total number of deaths, Malaria accounted for 60, Pulmonary Tuberculosis 38, Old Age and Debility 25, Convulsions 48, Unknown and other causes 93.

The mortality under one year of age was 92 as against 62 in 1916.

The following table shows the Infantile Mortality under one year of age:—

Year.			Deaths.	Percentage to total death-rate.	Percentage to total birth-rate.
1915	...	...	46	32·39	28·05
1916	...	...	62	30·69	20·94
1917	...	...	92	34·84	43·81

There was one still-birth during the year as against nil in 1916. The causes of deaths amongst infants under one year of age were as follows:—Malaria 19, Convulsions 37, Bronchitis 9, Inanition 7, Diarrhoea 4, Measles 1, other causes and unknown 15.

There was an epidemic of Measles which accounted for the lowered vitality of the children, and caused many deaths probably recorded under Convulsions and unknown. In 1917 there were 59 more deaths in children under 10 years of age than in 1916.

Malaria.—This disease was rather more prevalent during the year. Forty-six cases were admitted to Hospital during the year as against 54 in 1916. Two hundred and twenty-two cases were treated as out-patients as against 199 in 1916. Of the total number of deaths, 60 were attributed to this disease as against 42 in 1916. A sum of \$406.58 was spent by the Rural Board for clearing empty tins, etc., in connection with anti-malarial measures. There were no special anti-malarial works undertaken during the year.

Beri-beri.—There were 42 admissions with 4 deaths as against 21 with 2 deaths in 1916. Kachang was continued in these cases as we were unable to obtain parboiled rice from the contractor. Most of these cases of Beri-beri came from Estates in Brunei. In Labuan there were only 10 cases. The number of admissions for Beri-beri for the years 1912 to 1917 is as follows:—

16	cases	for	1912.
23	„	„	1913.
17	„	„	1914.
9	„	„	1915.
21	„	„	1916.
42	„	„	1917.

Venereal Diseases.—Seventeen cases were admitted to Hospital during the year as against 30 in 1916. Of the total deaths, one was due to these diseases as against nil. in 1916. Two cases were treated as out-patients as against 25 in 1916. These cases do not readily come for treatment, but the current year has shewn at least a temporary improvement.

Pulmonary Tuberculosis.—There were 4 admissions with 2 deaths during the year as against 9 with 9 deaths in 1916. Of the total number of deaths, 38 were due to this disease. The percentage of deaths was 14·39 of the total death-rate as against 12·87 in 1916. Many natives died from this disease who did not seek treatment.

Dysentery.—Nine cases were admitted to Hospital during the year with 3 deaths as against 5 with 1 death in 1916.

Port Health Work.—There was very little work done as very few ships called at Labuan. Only 4 ships were examined and none were detained.

Police Force:—

	1916.	1917.
Number of admissions to hospital ...	16	23
„ „ out-patients ...	282	186
„ „ admissions for Malaria ...	21	10
„ „ out-patients for Malaria ...	115	58

Prisoners:—

	1916.	1917.
Number admitted to hospital ...	16	19
„ of out-patients ...	15	48
admitted for Malaria ...	3	4

Out-patients.—Six hundred and thirty-nine cases were treated as out-patients as against 614 in 1916. Nationalities are as follows:—Seven Europeans, 23 Eurasians, 333 Malays, 99 Chinese, 166 Indians, and 11 other nationalities. The chief diseases treated were Malaria, Bronchitis, Diseases of Digestive System, Injuries, Round-worm and Scabies.

Vaccination.—One hundred and twenty-seven children were vaccinated during the year as against 209 in 1916. Of these, 124 were successful, 2 failed, and 1 was not seen. There were 86 fewer births in 1917.

Ages.—Three to 4 months 27, 4 months to 1 year 88, and above 1 year 12.

Metecrological.—The North-east Monsoon blew from January to the end of February when the South-west Monsoon began and continued to the end of December. Locally the wind during the North-east Monsoon blew chiefly from due North. The total rainfall during the year was 4,720 millimetres or 185·82 inches, and this is the highest on record. The rainfall for the years 1915 to 1917 is as follows:—

1915	...	...	...	...	141·27 inches
1916	...	...	...	...	172·72 „
1917	...	...	...	...	185·82 „

The wettest month was December when 657 millimetres or 25·86 inches fell. The greatest rainfall on any day of the year was 270·5 millimetres or 10·64 inches on the 15th November.

The maximum temperature in shade was 92·5 degrees on 1st June

„ minimum	„	„	70·0	„	„	{ 30th August and
„ maximum mean temperature was	88·4	„				{ 17th October.
„ minimum	„	„	74·4	„		
„ mean temperature was	...	81·4	„			

The general depression of health throughout the year as evidenced by the increased mortality was probably partly attributable to the abnormal number of rainy days.

Hospital.—The total number of admissions during the year was 195 as against 173 in 1916. Of these, 129 were Chinese, 24 Malays, 28 Indians, and 14 other nationalities. There were 17 deaths giving a percentage mortality of 8·58 as against 9·94 in 1916. The percentage mortality excluding 2 deaths within 24 hours of admission is 7·57. The chief diseases treated were Malaria 47 with 4 deaths, Beri-beri 43 with 4 deaths, Pulmonary Tuberculosis 4 with 2 deaths, Dysentery 9 with 3 deaths, Ankylostomiasis 2 with no deaths, and Venereal Diseases 17 with 1 death.

Operations.—Two major and one minor operations were performed under chloroform, and very few minor operations under local anæsthetics.

Staff.—Mr. F. RODRIGUEZ, Senior Assistant Surgeon, acted for me from the beginning of the year to the 12th of April, when I relieved him. Otherwise the staff remained the same as in 1916.

	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.
Number of inhabitants in 1917 ...	6,769	5,535	49,545	260,216	32,892	4,502	359,459
" Births during the year 1917	116	171	1,940	6,640	509	98	9,474
" Deaths " 1917	63	95	1,934	9,843	815	87	12,837
" Immigrants " 1917 } " Emigrants " 1917 }	Not available.						
Number of inhabitants in 1916 ...	6,580	5,381	48,162	252,954	31,974	4,377	349,428
Increase or	89	154	1,383	7,262	918	125	10,031
Decrease

[illegible]

PENANG AND DINDINGS.

Return of the Statistics of Population for the Year 1917.

				Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.
Number of inhabitants in 1917	...	...	...	{ 1,052	1,616	37,670	82,810	24,921	1,723	149,792 P.
" " 1917	...	...	...	{ 21	5	6,380	2,297	1,917	26	10,646 D.
" Births during the year 1917	...	...	...	{ 40	42	1,257	2,476	531	70	4,416 P.
" " " 1917	...	...	...	{ ...	...	229	65	86	...	380 D.
" Deaths " 1917	...	...	...	{ 14	40	1,181	3,123	885	108	5,351 P.
" " " 1917	...	...	...	{ ...	1	199	169	104	...	473 D.
" Immigrants " 1917	...	...	...	...	...	...	...	80,077	...	...
" Emigrants " 1917	...	...	...	...	...	...	40,905	...	...	...
Number of inhabitants in 1916	...	...	...	{ 1,044	1,605	37,405	82,227	24,745	1,711	148,737 P.
" " 1916	...	...	...	{ 21	5	6,261	2,254	1,881	26	10,448 D.
Increase or ...	...	...	...	{ 8	11	265	583	176	12	1,055 P.
" " ...	...	...	...	{ ...	...	19	43	36	...	198 D.
Decrease ...	...	...	...	...	...	...	...	...	...	...

Meteorological Return for the Year 1917.

			TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
			Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Inches.	Degree of Humidity.	General Direction.	Average Force.	
January	...	...	°F 143'4	°F 70	°F 88'7	°F 72	°F ...	°F 81'5	Inches. 142'7	% 74	N.W.	Not recorded.	
February	...	...	138'2	71	89'6	72'5	...	83	109'25	8	S.E.		
March	...	...	142'7	71'8	89'8	73'1	...	83'3	105'92	77	E.		
April	...	...	142	71'7	93'2	73'3	...	84	116	74'8	N.		
May	...	...	143'4	69'9	88'5	71'9	...	82'6	353	77'6	N.		
June	...	...	145'2	70'7	91'1	73'6	...	82'2	138	74'4	N.		
July	...	...	139'6	71'8	89	75'6	...	80'3	219'5	78	E.		
August	...	...	142'1	71'6	89	72'9	...	82'7	253	77	E.		
September	...	...	142'4	70'9	89'7	72'1	...	82'6	226	7	N.W.		
October	...	...	142'4	69'9	86'5	71'6	...	81'9	289	93'2	N.		
November	...	...	142'5	69'4	86'6	71'8	...	81'3	370	88'4	E.		
December	...	...	140	68'8	86'4	70'9	...	80'5	100	93'1	N.W.		
Mean	...	...	141'99	70'6	89	72'6	...	82'1	2422'37	80'2	...	...

MALACCA.

Return of the Statistics of Population for the Year 1917.

	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.
Number of inhabitants in 1916 ...	347	1,754	89,875	40,425	8,554	489	141,444
„ Births during the year 1917	5	74	4,286	1,094	246	157	5,862
„ Deaths „ „ 1917	3	55	4,257	2,036	645	115	7,111
„ Immigrants „ „ 1917	} No data available.						
„ Emigrants „ „ 1917							
Number of inhabitants in 1917 ...	356	1,801	92,260	41,498	8,781	502	145,198
Increase	9	47	2,385	1,073	227	13	3,754
or Decrease ... ..	...	...	...	...	...	...	...

Meteorological Return for the Year 1917.

	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Millimetres	Degree of Humidity.	General Direction.	Average Force.	
January	134.2	...	84.5	70.3	14.2	80.1	263	88	N.E.	...	
February	137.5	...	84.9	70.6	14.3	79.6	326	89	N.E.	...	
March	143.1	...	86.1	71.7	14.4	81.7	158	85	N.E.	...	
April	150.5	...	87.5	71.9	15.6	82.1	47	86	N.E.	...	
May	148.4	...	86.4	72.2	14.2	82.6	40.50	84	N.E.	...	
June	147.5	...	83.3	72.3	11.0	82.3	161.50	75	S.E.	...	
July	148.1	...	88.2	72.3	15.9	82.9	202	84	S.E.	...	
August	137	...	87.0	72.0	15.0	81.7	368	86	S.	...	
September	141	...	87.0	72.5	14.5	81.7	165.5	85	N.E.	...	
October	148	...	87.6	72.7	14.9	82	345	83	S.W.	...	
November	135	...	87.1	72	15.1	80.6	187.50	87	N.E.	...	
December	132	...	86.8	73	13.8	79.4	170.50	89	N.E.	...	
Mean	141.8	..	86.3	71.8	14.4	81.4	2434.50 Total	85	N.E.	...	

LABUAN.

Return of the Statistics of Population for the Year 1917.

	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	Total.
Number of inhabitants in 1917 ...	26	45	4,641	1,827	189	68	6,796
„ Births during the year 1917	2	3	145	54	3	3	210
„ Deaths „ „ 1917	1	...	194	63	5	1	264
„ Immigrants „ „ 1917	...	...	...	...	...	...	...
„ Emigrants „ „ 1917	12	...	...	...	...	...	12
Number of inhabitants in 1916 ...	37	42	4,690	1,836	191	66	6,862
Increase ... ..	...	3	...	...	...	2	...
or Decrease	11	...	49	9	2	...	66

Meteorological Return for the Year 1917.

			TEMPERATURE.					RAINFALL.		WINDS.		REMARKS.
			Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Inches.	Degree of Humidity.	General Direction.		Average Force.
			°F	°F	°F	°F	°F	Ins.	%			
January	...	...	73.5	84.8	75.2	9.6	80.0	168.5	90	N.		
February	...	...	73.6	84.9	75.4	9.5	80.1	95.0	90	N.		
March	...	...	74.1	86.1	76.2	9.9	81.1	225.5	90	S.W.		
April	...	...	73.4	87.3	76.3	11.0	81.8	585.0	89	S.W.		
May	...	...	74.2	87.2	76.1	11.1	81.6	239.0	90	S.W.		
June	...	...	74.8	88.4	80.8	7.6	84.6	390.5	87	S.W.		
July	...	...	74.0	88.2	76.4	11.8	82.3	372.0	88	S.W.		
August	...	...	73.6	87.8	75.1	12.7	81.4	612.5	89	N.W.		
September	...	...	73.5	87.1	75.2	11.9	81.1	298.5	90	S.W.		
October	...	...	72.9	86.2	75.1	11.1	80.6	525.0	89	S.W.		
November	...	...	73.2	85.9	75.1	10.8	80.5	551.5	89	S.W.		
December	...	...	72.4	84.8	74.4	10.4	79.6	657.0	89	S.W.		
Mean	...	...	73.6	86.5	75.9	10.6	81.2	4720.2 or 185.82 inches	89	...	...